Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Personality and Individual Differences 182 (2021) 111062

Contents lists available at ScienceDirect

Personality and Individual Differences

journal homepage: www.elsevier.com/locate/paid

Perceived stress of the COVID-19 pandemic and adolescents' depression symptoms: The moderating role of character strengths

Qianwen Liu, Zhenhong Wang *

School of Psychology, Shaanxi Normal University, Shaanxi Provincial Key Research Center of Child Mental and Behavioral Health, Xi'an, China

ARTICLE INFO

Keywords:
Perceived stress of the COVID-19 pandemic
Depression symptoms
Character strength
Adolescents

ABSTRACT

The outbreak of COVID-19 could increase adolescents' psychological distress and have a detrimental effect on their mental health. However, the negative effect of the COVID-19 pandemic on adolescents' mental health might be moderated by their existing psychological resources. The present study sought to investigate whether the relationship between adolescents' perceived stress of the COVID-19 pandemic and their depression symptoms was alleviated by their character strengths. A total of 617 adolescents were recruited and completed the online survey during the COVID-19 pandemic. The results indicated that adolescents' perceived stress of the COVID-19 pandemic was significantly positively correlated with their depression symptoms. Character strengths were significantly negatively correlated with adolescents' perceived stress of the COVID-19 pandemic and their depression symptoms. Moreover, the moderating effect of character strengths on the relationship between adolescents' perceived stress of the COVID-19 pandemic and their depression symptoms was significant. Therefore, adolescents' character strengths as a protective factor could buffer the effect of perceived stress of the COVID-19 pandemic on their depression symptoms and contribute to maintaining their mental health.

1. Introduction

COVID-19, which poses a severe threat to global public health, is spreading and has negatively affected individual physical and psychological health. Recent research has indicated that the spread of COVID-19 may be decreasing adolescents' mental health (Hawes et al., 2021). However, the negative effect of the COVID-19 pandemic on adolescents' mental health might be alleviated by their existing psychological resources, such as their character strengths. The present study aimed to investigate whether adolescents' character strengths acted as a protective factor to buffer the effect of perceived stress of the COVID-19 pandemic on their depression symptoms.

1.1. Perceived stress of the COVID-19 pandemic and depression symptoms

Perceived stress is a psychological state that refers to the degree to which individuals appraise their experienced life events as uncontrollable, unpredictable, and overloading and determines their response to environmental stressors (Cohen et al., 1983). In line with the transactional stress model (Lazarus & Folkman, 1984), objective stressful events affect individuals' reactions and adaption via their cognitive appraisal of those stressors, i.e., their perceived stress, which occurs when individuals perceive the demands of environmental events as exceeding their capacity to adapt (Cohen et al., 1995). Different perceived stress among individuals and the subsequent adoption of coping strategies are the explanatory mechanisms underlying the relationship between actual stressors and outcomes (Lazarus & Folkman, 1984). Individuals with a higher global level of perceived stress may have more difficulty realizing positive cognition, emotion, and behaviors and are at greater risk for health problems (Lindholdt et al., 2021; Yan et al., 2021). Depression symptoms, which feature a combination of depressed mood states, including feelings of sadness, worthlessness, hopelessness, and helplessness (Li & Mei, 2002), constitute one of the most common mental health problems and are related to social maladjustment and physical symptoms among children and adolescents (Makol & Polo, 2018). Prior research has examined the relationship between perceived stress, as measured by the Perceived Stress Scale based on the transactional stress model (Cohen et al., 1983; Lazarus & Folkman, 1984), and adolescents' depression symptoms and showed that perceived stress is positively related to adolescents' self-reported depression symptoms; that is, adolescents with a higher level of perceived stress reported more depression symptoms (Felton et al.,

* Corresponding author at: School of Psychology, Shaanxi Normal University, No.199, South Chang'an Road, Xi'an 710062, China.
E-mail address: wangzhenhong@snnu.edu.cn (Z. Wang).

https://doi.org/10.1016/j.paid.2021.111062
Received 15 October 2020; Received in revised form 18 May 2021; Accepted 5 June 2021
Available online 10 June 2021

2017; Lathren et al., 2019). The spread of COVID-19 is a highly stressful event that has exposed adolescents to threats to their health and a long duration of quarantine, which could increase mental distress, such as depression symptoms (Hawes et al., 2021). Therefore, a higher level of perceived stress of the COVID-19 pandemic might lead to more depression symptoms in adolescents, which has not been reported in previous studies.

1.2. Character strengths and depression symptoms

Character strengths are morally valued positive traits that are reflected in thoughts, emotions, and behaviors (Peterson & Seligman, 2004). Peterson and Seligman (2004) suggested a classification of character strengths known as Values in Action (VIA), which include 24 character strengths, each of which is organized under one of the six virtues: wisdom and knowledge, courage, humanity, justice, temperance, and transcendence. The VIA Inventory of Strengths for Youth (VIA-Youth), which is based on the VIA classification system, was developed to assess character strengths among adolescents (Park & Peterson, 2005; (Blanca et al., 2018). In empirical studies using VIA-Youth, four-factor, five-factor, and three-factor solutions of character strengths have been reported and different dimensions of VIA-Youth are commonly used to describe adolescents' character strengths (Park & Peterson, 2006; Ruch et al., 2014; Park et al., 2017). Additionally, the total score for 24 character strengths has also been used to assess the global character strengths of adolescents in previous studies (Liu & Wang, 2021; Zhang et al., 2016).

Employing the VIA-Youth, empirical studies have found that character strengths could promote positive behavioral, mental, and emotional developmental outcomes in adolescents (Datu & Mateo, 2020; Shoshani & Slone, 2013; Wagner, 2019; Weber & Ruch, 2012). With regard to depression symptoms, some character strengths were found to be inversely related to individual depression symptoms (Kim et al., 2018; Tehranchi et al., 2018). In addition, prior work has indicated that interventions targeting character strengths can reduce depression symptoms in adults (Schutte & Malouff, 2019). In the context of the key resource theory (Hobfoll, 2002; Thoits, 1994) and the broaden-and-build theory of positive emotions (Fredrickson, 2001), individuals with positive psychological resources are prone to being more capable of selecting, altering, and implementing their other resources to decrease mental distress, enabling them to flourish. Numerous studies have demonstrated that adolescents' psychological resources, including emotional intelligence, mindfulness, and resilience, can alleviate their depression symptoms (Anyan & Hjemdal, 2016; Chi et al., 2019; Davis & Humphrey, 2012). Therefore, character strengths, as an important psychological resource, might be negatively related to adolescents' depression symptoms. However, no study to date has reported the relationship between adolescents' character strengths and depression symptoms during the COVID-19 pandemic.

1.3. Moderating role of character strengths

Previous studies have demonstrated a positive correlation between perceived stress and adolescents' depression symptoms (Lorenzo-Blanco & Unger, 2015). However, as mentioned above, the relationship between perceived stress and adolescents' depression symptoms might be affected by their existing psychological resources. The stress-buffering model suggested that some individuals who possess high social or psychological resources are less susceptible to the impact of environmental stressors and could be more inclined to dynamically adjust their adaptability to stress, subsequently experiencing fewer negative outcomes (Cohen & Wills, 1985). Specifically, those positive characteristics benefit individuals experiencing both high and low levels of perceived stress but may exert a significantly greater effect under high-stress conditions (Rueger et al., 2016; Stroebe & Stroebe, 1997).

Character strengths, as positive individual characteristics, could buffer the negative effect of stress on adaptation and promote the ability of adolescents to cope with stress more effectively (Sueki, 2020). Several studies have emphasized that character strengths are a positive factor and could protect against the negative effect of stress on individuals' mental health (Duan et al., 2015; Duan & Guo, 2015). Specifically, strengths could be beneficial for resolving conflicts caused by trauma via cognitive, emotional, and behavioral regulation (Duan & Guo, 2015). Similarly, adolescents with high levels of character strengths might be prone to selecting positive methods of coping with the challenges caused by the COVID-19 pandemic. More importantly, the protective effect of character strengths might also affect the process of appraising stressors, as suggested by the transactional stress model (Lazarus & Folkman, 1984; Lee et al., 2019). Individuals with high levels of character strengths might have a reduced perception of the level of stress than those with low levels of character strengths and might therefore exhibit more adaptive psychological reactions (Wood et al., 2011). In this vein, adolescents with high levels of character strengths might perceive stress less and experience fewer negative effects of the COVID-19 pandemic on their mental health, including depression symptoms. Taken together, character strengths might be a protective factor against the effect of perceived stress of the COVID-19 pandemic on depression symptoms in adolescents, thereby reducing their risk of suicide. However, few studies have examined this issue.

1.4. Present study

In summary, the present study aimed to examine the moderating effect of character strengths on the association between adolescents' perceived stress of the COVID-19 pandemic and their depression symptoms (Fig. 1). Specifically, we hypothesized that adolescents' perceived stress of the COVID-19 pandemic would be positively linked with their depression symptoms. Moreover, we expected that the moderating effect of adolescents' character strengths on this relationship would be significant, i.e., character strengths could alleviate the effect of perceived stress of the COVID-19 pandemic on adolescents' depression symptoms.

2. Methods

2.1. Participants

In the present study, 617 adolescents ($M = 13.11$, $SD = 2.25$; 291 female) were recruited from six provinces affected by the COVID-19 epidemic in China. We advertised on the forums of a primary school and a middle school in each province, and then students in grades 5–10 were randomly selected. After our Institutional Review Board approved the study, informed consent was obtained from the parents. Then, the participants completed the online survey anonymously in their spare time. Based on the requirement that no item on the online survey should have missing data, all responses of the 617 adolescents were included in our analyses. The participants' family SES was measured based on family wealth (assessed by the number of computers, televisions, and cars in the household) and maximum parental education (Pang et al., 2013). Most participants' parents had less than a high school degree (75.2% mothers, 71% fathers). Regarding family wealth, 61.3% of the families had one or more computers, 90.8% had one or more televisions, and 67.1% had one or more cars. Everyone who participated in our study was given 10 Yuan as compensation.

2.2. Measures

2.2.1. Perceived stress of the COVID-19 pandemic

The Chinese version of the Perceived Stress Scale-14 (CPSS-14) was used to assess adolescents' perceived stress of the COVID-19 pandemic (Cohen et al., 1983; Yang & Huang, 2003). This scale is comprised of 14 items rated on a five-point Likert-type scale ranging from 1 = *It never*

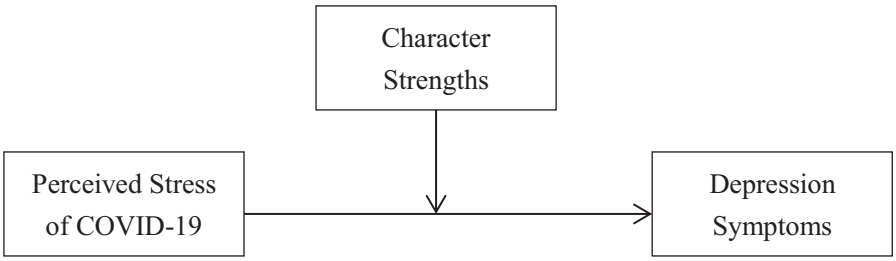

Fig. 1. The hypothesized model.

occurred to 5 = *It was always*. To measure adolescents' perceived stress of the COVID-19 pandemic, we revised all the items on the scale (e.g., "Since the start of the COVID-19 outbreak, I have felt that I have been unable to control the important things in my life"). The CPSS-14 consists of two subscales: perceived stress and perceived lack of control. The total score obtained by combining the scores on the two subscales has been widely used to represent overall perceived stress (Du et al., 2020; Ye et al., 2018). A higher total score indicates a higher level of perceived stress. In the present study, the CPSS-14 showed good validity (CFI = 0.95. TLI = 0.93, RMSEA = 0.069) and reliability (Cronbach's α = 0.70).

2.2.2. Depression symptoms

The depression subscale from the Chinese version of the General Health Questionnaire-20 (GHQ-20) was used to assess adolescents' depression symptoms (Goldberg, 1972; Li & Mei, 2002). This scale is comprised of 5 items rated on a four-point Likert-type scale ranging from 1 = *It never occurred* to 4 = *It was always*. A higher total score indicates more depression symptoms. The depression subscale showed good reliability (Jiang & Li, 2019), and the Cronbach's α coefficient for the depression subscale was 0.78 in the present study.

2.2.3. Character strengths

The VIA Inventory of Strengths for Youth (VIA-Youth) was used to assess the adolescents' character strengths (www.authentichappiness.sas.upenn.edu) (Park & Peterson, 2005). Liu and Wang (2021) reported a revised version of VIA-Youth that consists of 121 items rated on a five-point Likert scale ranging from 1 = *very much unlike me* to 5 = *very much like me*, and the total score for the 24 strengths is used as an index of global character strengths. A higher total score indicates a higher level of global character strength. In the present study, the revised version of VIA-Youth showed good validity (CFI = 0.94. TLI = 0.92, RMSEA = 0.079) and reliability (Cronbach's α = 0.93).

2.3. Analytic strategy

In the present study, SPSS software version 21.0 (IBM, Armonk, NY, USA) was used to conduct the following statistical analyses. First, preliminary analyses, including descriptive statistical analyses and correlation analyses between the study variables, were conducted. Second, all continuous variables were standardized, and the interaction term was computed from these standardized scores. Age, sex, and family SES were included as control variables in our analyses. The interactive effect of perceived stress of the COVID-19 pandemic and character strengths (perceived stress of the COVID-19 pandemic × character strengths) on adolescents' depression symptoms was examined by hierarchical multiple regression analysis. The control variables were entered in the first step. The main effects of perceived stress of the COVID-19 pandemic and character strengths were entered in the second step. The interaction term was entered in the third step. Moreover, we conducted the simple slope analysis proposed by Aiken and West (1991) to further analyze the moderating role of character strengths.

3. Results

3.1. Preliminary analyses

The descriptive statistics and bivariate correlations are presented in Table 1. As shown in Table 1, the correlation analysis demonstrated that perceived stress of the COVID-19 pandemic was positively correlated with adolescents' depression symptoms ($r = 0.48$, $p < 0.01$). Moreover, global character strengths were negatively correlated with perceived stress of the COVID-19 pandemic ($r = -0.38$, $p < 0.01$) and adolescents' depression symptoms ($r = -0.47$, $p < 0.01$). The results revealed good reliability of the study variables (between 0.70 and 0.93).

3.2. Moderating effect of character strengths

As shown in Table 2, the results of the hierarchical multiple regression analysis showed that the interactive effect of perceived stress of the COVID-19 pandemic and global character strengths on adolescents' depression symptoms was significant (β = −0.07, $p < 0.05$).

Subsequently, we conducted a simple slope analysis, which compared the effects of high levels of character strengths and low levels of character strengths on the relationship between perceived stress of the COVID-19 pandemic and adolescents' depression symptoms. High levels of character strengths were defined as 1 *SD* above the mean, while low levels of character strengths were defined as 1 *SD* below the mean. The results suggested that high levels of perceived stress of the COVID-19 pandemic (mean + 1 *SD*) might be associated with lower levels of depression symptoms in adolescents with high levels of character strengths (β = 0.29, $p < 0.01$) than in those with low levels of character strengths (β = 0.43, $p < 0.01$); that is, character strengths might buffer the effect of perceived stress of the COVID-19 pandemic on adolescents'

Table 1
Means, standard deviations, and correlations of the main study variables.

Study variables	1	2	3	4	5	6
1 Sex	–					
2 Age	0.03	–				
3 Family SES	−0.02	−0.18**	–			
4 Perceived stress of the COVID-19 pandemic	−0.01	0.03	−0.06	–		
5 Character strengths	−0.09*	−0.02	0.12**	−0.38**	–	
6 Depression symptoms	−0.05	0.06	−0.02	0.48**	−0.47**	–
Max	2.00	17.00	22.00	62.00	116.77	20.00
Min	1.00	10.00	5.00	18.00	35.67	5.00
M	1.53	13.11	10.10	38.76	88.91	9.30
SD	0.50	2.25	2.57	6.91	14.00	3.51
Ske	−0.11	0.36	0.80	−0.44	−0.17	0.50
Kur	−1.99	−1.28	1.51	0.53	0.01	−0.39

Note. $N = 617$. Gender was coded 1 for females and 2 for males.
* $p < 0.05$.
** $p < 0.01$.

Table 2
The interactive effect of perceived stress and character strengths predicting depression symptoms.

Predictors	Depression symptoms											
	Model 1 ($\Delta R^2 = 0.01$)				Model 2 ($\Delta R^2 = 0.33$)				Model 3 ($\Delta R^2 = 0.01$)			
	β	SE	t	p	β	SE	t	p	β	SE	t	p
Sex	−0.10	0.08	−1.26	0.21	−0.15	0.07	−2.31	0.02	−0.15	0.07	−2.23	0.03
Age	0.03	0.02	1.37	0.17	0.02	0.02	1.45	0.15	0.02	0.02	1.50	0.13
SES	−0.01	0.02	−0.34	0.74	0.02	0.01	1.41	0.16	0.02	0.01	1.38	0.17
Perceived stress of the COVID-19 pandemic					0.34	0.04	9.67	< 0.01	0.36	0.04	9.95	<0.01
Character strengths					−0.35	0.04	−9.80	< 0.01	−0.34	0.04	−9.55	<0.01
Perceived stress of the COVID-19 pandemic × character strengths									−0.07	0.03	−2.22	0.03

Note. N = 617.

depression symptoms (Fig. 2).

4. Discussion

As expected, the findings of the present study indicated that perceived stress of the COVID-19 pandemic was significantly positively correlated with adolescents' depression symptoms, while character strengths were significantly negatively correlated with adolescents' perceived stress of the COVID-19 pandemic and depression symptoms. Importantly, character strengths moderated the relationship between perceived stress of the COVID-19 pandemic and depression symptoms in adolescents.

The present study indicated that perceived stress of the COVID-19 pandemic was positively correlated with adolescents' depression symptoms. High levels of perceived stress, as suggested in previous studies, can harm adolescents' mental health (Giota & Gustafsson, 2017; Beaver et al., 2012) and even their physical health (Cohen et al., 2007). Similarly, during the COVID-19 pandemic, high perceived levels of stress of COVID-19 was related to more depression symptoms in adolescents. Adolescents who appraised stressful changes caused by this traumatic event as being more threatening were prone to more depression symptoms.

The present study found that character strengths were inversely correlated with adolescents' depression symptoms. As the key resource theory (Hobfoll, 2002; Thoits, 1994) and the broaden-and-build theory of positive emotions (Fredrickson, 2001) suggest, positive psychological resources are helpful for maintaining mental health and social adaptation. Prior studies have indicated that character strengths are an important resource and benefit adolescents' mental health (Datu & Mateo, 2020). In the present study, character strengths were found to be negatively related to adolescents' depression symptoms during the COVID-19 pandemic. As previous studies suggested, high levels of character strengths could be beneficial for adolescents' problem solving

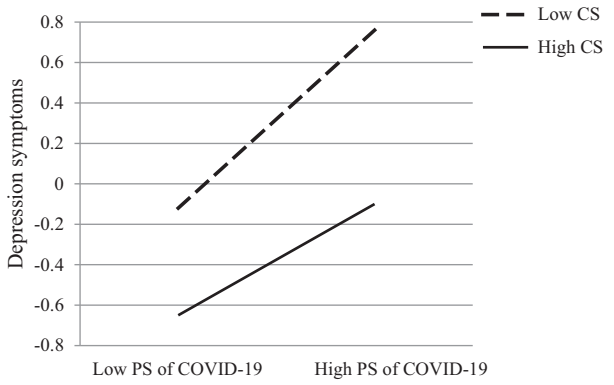

Fig. 2. The interactive effect of perceived stress of the COVID-19 pandemic and character strengths on depression symptoms. PS = perceived stress. CS = character strengths.

skills and adaptation ability (Hellman & Gwinn, 2017; Marco et al., 2016). Therefore, culturing character strengths could facilitate the flourishing of children (Park et al., 2017; Park & Peterson, 2005) and protect them from depression symptoms or other mental health problems.

More importantly, our study found that character strengths could moderate the relationship between perceived stress of the COVID-19 pandemic and adolescents' depression symptoms. In the context of the stress-buffering model, the degree to which individuals appraise stressors as uncontrollable, unpredictable, and overloading and the coping strategies they utilize are largely affected by the resources they have to manage the stressful situation (Cohen & Wills, 1985). Character strengths, which are a positive psychological resource, could buffer the negative effect of stress on adaptation (Sueki, 2020). Specifically, character strengths might alleviate the effect of perceived stress of the COVID-19 pandemic on adolescents' depression symptoms by promoting effective coping with stressful demands and the negative changes resulting from the pandemic. Moreover, prior research suggested that high levels of character strengths are significantly linked to decreased stress (Garcia-Castro et al., 2019). Therefore, it might be the case that adolescents' character strengths could benefit their mental health via the reduction of perceived stress, i.e., high levels of character strengths might perceive stress less and predispose adolescents to perceive the changes due to the COVID-19 pandemic as relatively less harmful factors.

The findings of our study could add to our theoretical understanding and have practical implications. Our study indicated the protective role of character strengths in the relationship between perceived stress of the COVID-19 pandemic and adolescents' depression symptoms, which enriches the stress-buffering model and provides a reference for further relevant empirical investigations. Additionally, our findings have a direct implication for supporting adolescents' mental health during the COVID-19 pandemic and other traumatic events. Developing adolescents' character strengths in daily life has potential protective value against the negative effect of severely stressful events on adaptation.

Several limitations of our study should be considered. First, the present study was cross-sectional and cannot determine causal relationships among perceived stress of the COVID-19 pandemic, character strengths, and adolescents' depression symptoms. Future studies should employ a longitudinal design to examine the moderating effect of character strengths. Second, the data might involve subjectivity due to self-reporting by adolescents in this study. More objective methods should be employed in the future. Finally, we considered global character strengths rather than focusing on one or more virtues or character strengths. Although using global character strengths as a study variable has advantages, the effects of individual virtues and character strengths should be explored in future studies.

In summary, character strengths as positive characteristics could buffer the effect of the COVID-19 pandemic on adolescents' depression symptoms. Developing adolescents' character strengths might be a practicable way of maintaining and improving their mental health

during a public health emergency.

Funding

This research was supported by National Natural Science Foundation Grant of China Grant (31971004), and the Research Program Funds of the Collaborative Innovation Center Assessment toward Basic Education at Beijing Normal University (2018-05-004-BZPK01), awarded to Zhenhong Wang.

CRediT authorship contribution statement

Qianwen Liu: Investigation, Methodology, Software, Data curation, Writing - original draft, Writing – review & editing. **Zhenhong Wang:** Conceptualization, Investigation, Data curation, Writing – original draft, Writing – review & editing, Supervision.

References

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Sage.

Anyan, F., & Hjemdal, O. (2016). Adolescent stress and symptoms of anxiety and depression: Resilience explains and differentiates the relationships. *Journal of Affective Disorders, 203*, 213–220. https://doi.org/10.1016/j.jad.2016.05.031.

Beaver, K. M., Vaughn, M. G., Wright, J. P., & Delisi, M. (2012). An interaction between perceived stress and 5-HTTLPR genotype in the prediction of stable depressive symptomatology. *American Journal of Orthopsychiatry, 82*(2), 260–266. https://doi.org/10.1111/j.1939-0025.2012.01148.x.

Blanca, M. J., Ferragut, M., Ortiz-Tallo, M., & Bendayan, R. (2018). Life satisfaction and character strengths in Spanish early adolescents. *Journal of Happiness Studies, 19*, 1247–1260. https://doi.org/10.1007/s10902-017-9865-y.

Chi, X., Liu, X., Guo, T., Wu, M., & Chen, X. (2019). Internet addiction and depression in Chinese adolescents: A moderated mediation model. *Frontiers in Psychiatry, 10*, 816. https://doi.org/10.3389/fpsyt.2019.00816.

Cohen, S., Janicki-Deverts, D., & Miller, G. E. (2007). Psychological stress and disease. *The Journal of the American Medical Association, 298*(14), 1685–1687. https://doi.org/10.1001/jama.298.14.1685.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*(4), 385–396. https://doi.org/10.2307/2136404.

Cohen, S., Kessler, R. C., & Gordon, U. L. (1995). Strategies for measuring stress in studies of psychiatric and physical disorder. In S. Cohen, R. C. Kessler, & U. L. Gordon (Eds.), *Measuring stress: A guide for health and social scientists*. Oxford University Press.

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*(2), 310–357. https://doi.org/10.1037/0033-2909.98.2.310.

Datu, J. A. D., & Mateo, N. J. (2020). Character strengths, academic self-efficacy, and well-being outcomes in the Philippines: A longitudinal study. *Children and Youth Services Review, 119*, Article e105649. https://doi.org/10.1016/j.childyouth.2020.105649.

Davis, S. K., & Humphrey, N. (2012). Emotional intelligence as a moderator of stressor–mental health relations in adolescence: Evidence for specificity. *Personality and Individual Differences, 52*(1), 100–105. https://doi.org/10.1016/j.paid.2011.09.006.

Du, J., Mayer, G., Hummel, S., Oetjen, N., Gronewold, N., Zafar, A., & Schultz, J. (2020). Mental health burden in different professions during the final stage of the COVID-19 lockdown in China: Cross-sectional survey study. *Journal of Medical Internet Research, 22*(12), Article e24240. https://doi.org/10.2196/24240.

Duan, W., & Guo, P. (2015). Association between virtues and posttraumatic growth: Preliminary evidence from a Chinese community sample after earthquakes. *PeerJ, 3*, Article e883. https://doi.org/10.7717/peerj.883.

Duan, W., Ho, S. M. Y., Siu, B. P. Y., Li, T., & Zhang, Y. (2015). Role of virtues and perceived life stress in affecting psychological symptoms among Chinese college students. *Journal of American College Health, 63*, 32–39. https://doi.org/10.1080/07448481.2014.963109.

Felton, J. W., Banducci, A. N., Shadur, J. M., Stadnik, R., Macpherson, L., & Lejuez, C. W. (2017). The developmental trajectory of perceived stress mediates the relations between distress tolerance and internalizing symptoms among youth. *Development and Psychopathology, 29*(4), 1391–1401. https://doi.org/10.1017/S0954579417000335.

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology-The broaden-and-build theory of positive emotions. *The American Psychologist, 56*(3), 218–226. https://doi.org/10.1037/0003-066X.56.3.218.

Garcia-Castro, F. J., Alba, A., & Blanca, M. J. (2019). Association between character strengths and caregiver burden: Hope as a mediator. *Journal of Happiness Studies, 21*(4), 1445–1462. https://doi.org/10.1007/s10902-019-00138-2.

Giota, J., & Gustafsson, J. E. (2017). Perceived demands of schooling, stress and mental health: Changes from grade 6 to grade 9 as a function of gender and cognitive ability. *Stress and Health, 33*(3), 253–266. https://doi.org/10.1002/smi.2693.

Goldberg, D. P. (1972). *The detection of psychiatric illness by questionnaire*. Oxford University Press.

Hawes, M. T., Szenczy, A. K., Klein, D. N., Hajcak, G., & Nelson, B. D. (2021). Increases in depression and anxiety symptoms in adolescents and young adults during the COVID-19 pandemic. *Psychological Medicine*, 1–9. https://doi.org/10.1017/S0033291720005358.

Hellman, C. M., & Gwinn, C. (2017). Camp HOPE as an intervention for children exposed to domestic violence: A program evaluation of hope, and strength of character. *Child and Adolescent Social Work Journal, 34*(3), 269–276. https://doi.org/10.1007/s10560-016-0460-6.

Hobfoll, S. E. (2002). Social and psychological resources and adaptation. *Review of General Psychology, 6*(4), 307–324. https://doi.org/10.1037///1089-2680.6.4.307.

Jiang, Z., & Li, M. (2019). The relationship between sleep quality and mental health of college students: A mediated moderating model. *Chinese Journal of Special Education, 11*, 81–87.

Kim, H. R., Kim, S. M., Ji, S. H., Han, D. H., Seo-Koo, Y., Min, K. J., & Lee, Y. S. (2018). Character strengths as protective factors against depression and suicidality among male and female employees. *BMC Public Health, 18*, 1084. https://doi.org/10.1186/s12889-018-5997-1.

Lathren, C., Bluth, K., & Park, J. (2019). Adolescent self-compassion moderates the relationship between perceived stress and internalizing symptoms. *Personality and Individual Differences, 143*, 36–41. https://doi.org/10.1016/j.paid.2019.02.008.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer.

Lee, B., Kaya, C., Chen, X., Wu, J., Iwanaga, K., Umucu, E., & Chan, F. (2019). The buffering effect of character strengths on depression: The intermediary role of perceived stress and negative attributional style. *European Journal of Health Psychology, 26*(3), 101–109. https://doi.org/10.1027/2512-8442/a000036.

Li, H., & Mei, J. R. (2002). Assessing psychological well-being of college student: Psychometric properties of GHQ-20. *Psychological Development and Education, 1*, 75–79.

Lindholdt, L., Labriola, M., Andersen, J. H., Kjeldsen, M. Z., Obel, C., & Lund, T. (2021). Perceived stress among adolescents as a marker for future mental disorders: A prospective cohort study. *Scandinavian Journal of Public Health, 1-6*. https://doi.org/10.1177/1403494821993719.

Liu, Q., & Wang, Z. (2021). Associations between parental emotional warmth, parental attachment, peer attachment, and adolescents' character strengths. *Children and Youth Services Review, 120*, Article e105765. https://doi.org/10.1016/j.childyouth.2020.105765.

Lorenzo-Blanco, E. I., & Unger, J. B. (2015). Ethnic discrimination, acculturative stress, and family conflict as predictors of depressive symptoms and cigarette smoking among Latino youth: The mediating role of perceived stress. *Journal of Youth and Adolescence, 44*(10), 1984–1997. https://doi.org/10.1007/s10964-015-0339-4.

Makol, B. A., & Polo, A. J. (2018). Parent-child endorsement discrepancies among youth at chronic-risk for depression. *Journal of Abnormal Child Psychology, 46*(5), 1077–1088. https://doi.org/10.1007/s10802-017-0360-z.

Marco, W., Lisa, W., & Willibald, R. (2016). Positive feelings at school: On the relationships between students' character strengths, school-related affect, and school functioning. *Journal of Happiness Studies, 17*(1), 341–355. https://doi.org/10.1007/s10902-014-9597-1.

Pang, W., Xu, X., Lin, L., & Ren, Y. (2013). The impact of family socioeconomic status on students' academic achievement. *Global Education, 42*(2), 12–21.

Park, D., Tsukayama, E., Goodwin, G. P., Patrick, S., & Duckworth, A. L. (2017). A tripartite taxonomy of character: Evidence for intrapersonal, interpersonal, and intellectual competencies in children. *Contemporary Educational Psychology, 48*, 16–27. https://doi.org/10.1016/j.cedpsych.2016.08.001.

Park, N., & Peterson, C. (2005). The values in action inventory of strengths for youth. In K. A. Moore, & L. H. Lippman (Eds.), *What do children need to flourish? Conceptualizing and measuring indicators of positive development*. Springer.

Park, N., & Peterson, C. (2006). Moral competence and character strengths among adolescents: The development and validation of the Values in Action Inventory of Strengths for Youth. *Journal of Adolescence, 29*, 891–909. https://doi.org/10.1016/j.adolescence.2006.04.011.

Peterson, C., & Seligman, M. E. P. (2004). *Character strengths and virtues: A handbook and classification*. Oxford University Press.

Ruch, W., Weber, M., Park, N., & Peterson, C. (2014). Character strengths in children and adolescents: Reliability and initial validity of the German Values in Action Inventory of Strengths for Youth (German VIA-Youth). *European Journal of Psychological Assessment, 30*(1), 57–64. https://doi.org/10.1027/1015-5759/a000169.

Rueger, S. Y., Malecki, C. K., Pyun, Y., Aycock, C., & Coyle, S. (2016). A meta-analytic review of the association between perceived social support and depression in childhood and adolescence. *Psychological Bulletin, 142*(10), 1017–1067. https://doi.org/10.1037/bul0000058.

Schutte, N. S., & Malouff, J. M. (2019). The impact of signature character strengths interventions: A meta-analysis. *Journal of Happiness Studies, 20*(4), 1179–1196. https://doi.org/10.1007/s10902-018-9990-2.

Shoshani, A., & Slone, M. (2013). Middle school transition from the strengths perspective: Young adolescents' character strengths, subjective well-being, and school adjustment. *Journal of Happiness Studies, 14*(4), 1163–1181. https://doi.org/10.1007/s10902-012-9374-y.

Stroebe, W., & Stroebe, M. S. (1997). The social psychology of social support. In E. T. Higgins, & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles*. Guilford Press.

Sueki, H. (2020). What character strengths are protective factors for suicidal ideation: A cross-sectional study in Japan. *Psychology, Health & Medicine*. https://doi.org/10.1080/13548506.2020.1758334.

Tehranchi, A., Doost, H. T. N., Amiri, S., & Power, M. J. (2018). The role of character strengths in depression: A structural equation model. *Frontiers in Psychology, 9*, 1609. https://doi.org/10.3389/fpsyg.2018.01609.

Thoits, P. A. (1994). Stressors and problem-solving: The individual as psychological activist. *Journal of Health and Social Behavior, 35*(2), 143–160. https://doi.org/10.2307/2137362.

Wagner, L. (2019). Good character is what we look for in a friend: Character strengths are positively related to peer acceptance and friendship quality in early adolescents. *The Journal of Early Adolescence, 39*(6), 864–903. https://doi.org/10.1177/0272431618791286.

Weber, M., & Ruch, W. (2012). The role of a good character in 12-year-old school children: Do character strengths matter in the classroom? *Child Indicators Research, 5*(2), 317–334. https://doi.org/10.1007/s12187-011-9128-0.

Wood, A. M., Linley, P. A., Maltby, J., Kashdan, T. B., & Hurling, R. (2011). Using personal and psychological strengths leads to increases in well-being over time: A longitudinal study and the development of the strengths use questionnaire. *Personality and Individual Differences, 50*, 15–19. https://doi.org/10.1016/j.paid.2010.08.004.

Yan, L., Gan, Y., Ding, X., Wu, J., & Duan, H. (2021). The relationship between perceived stress and emotional distress during the COVID-19 outbreak: Effects of boredom proneness and coping style. *Journal of Anxiety Disorders, 77*(3), Article 102328. https://doi.org/10.1016/j.janxdis.2020.102328.

Yang, T. Z., & Huang, H. T. (2003). An epidemiological study on stress among urban residents in social transition period. *Chinese Journal of Epidemiology, 9*, 11–15.

Ye, B., Zhu, L., Fang, X., Liu, M., Wang, K., & Yang, Q. (2018). The effect of perceived stress on college students' depression: Moderated mediating effect. *Psychological Development and Education, 34*(4), 497–503.

Zhang, H., Wang, J., Li, X., Chen, H., & Wang, Y. (2016). Regulating effects of parents' educational level on the influence of character strengths of adolescent depressive symptoms. *Chinese General Practice, 19*(24), 2975–2981.