



Exploring the associations among perceived teacher emotional support, resilience, Covid-19 anxiety, and mental well-being: evidence from Chinese vocational college students

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Abstract

This study aimed to examine the relations between perceived teacher emotional support, Covid-19 anxiety, resilience, and mental well-being among Chinese vocational college students during Covid-19 pandemic. A sample of Chinese vocational college students ($n = 1469$) were surveyed with an online questionnaire composed of Teacher Emotional Support, Covid-19 Anxiety Scale, Brief Resilience Scale and Mental Well-being in Chinese version. Path analysis was employed in the study and the results showed that teacher emotional support was an important promoter for building up mental well-being but not a buffer for Covid-19 within Chinese cultural context, and the Covid-19 anxiety was significantly and negatively related to mental well-being. Resilience hindered the incidences of Covid-19 anxiety and was a significant protector for mental well-being. Covid-19 anxiety mediated the both relations between teacher emotional support and mental well-being, and resilience and mental well-being. These findings provided practical implications for coping with psychological problems and flourishing mental well-being among Chinese vocational college students.

Keywords Teacher emotional support · Resilience · Covid-19 anxiety · Mental well-being

Introduction

The worldwide Covid-19 pandemic has been lasting for more than two years, with occasional emergencies of extremely serious conditions in some areas. Covid-19 was considered to be the first worldwide pandemic causing unpredictable psychological, social and economic consequences (WHO, 2020). Some people are faced with inadequate access to supplies, restricted physical exercise and entertainment activities (Brooks et al., 2020). While people adjust their behaviors, thoughts and emotions to the threatening changes, anxiety and stress are generally considered as the common responses to the threat in the emotional, cognitive, and behavioral domains

(Borkovec, 2002; Zysberg & Zisberg, 2020), which bring about severe impact on mental health. All age groups were reported to have adverse mental and psychological health problems caused by the pandemic, among whom college students were considered as one of the vulnerable groups. They were at more increased risk for anxiety because of the disruptions of abnormal academic study and restricted social life on campus, and the pre-existing higher level of psychological distress (e.g., Ye et al., 2022). In China, most vocational college students come from the background of low economical status, and tend to be more anxious about their academic achievements and future work than their counterparts in other types of higher education (e.g., Yang, 2020). What's more, social discrimination against vocational education makes them be faced with more pressure (Zhang, 2019). Thus, they may become even more worried about the aggravated uncertainty of their future during the pandemic. Accumulating studies demonstrated that high level of anxiety among college students has increased around the world (e.g., Amerio et al., 2020). As the most common psychological response to emergencies, anxiety leads to many obvious negative results, one of which is the decrease of the mental well-being now and in future (Qiu et al., 2020; Stallings et al., 1997; Xu et al., 2020). Mental well-being embodied people's

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physical health, psychological health, and social adaptation and even academic or work achievements (Diener et al., 2018). It is an important indicator for life quality and reflects the overall valuation concerned with society, economy and even environment. Therefore, researchers have proposed various strategies to cope with the hindrances for mental well-being, especially with the background of Covid-19.

The Covid-19 epidemic irregularly happened in some areas in 2022. When that occurred, some restrictions were implemented in response to the Covid-19 pandemic in China. In-person learning, non-essential activities, and social interaction activities were limited in students' daily life at vocational colleges (Burns et al., 2020). The epidemic was not far away from Chinese vocational college students, which suddenly increased students' worries about their family members' health, academic achievement, and uncertainty of future work, which resulted into various psychological problems and has caused attention from college faculty and society (Tan et al., 2021). Against this backdrop, colleges have reaffirmed the importance of applying multiple measures to student mental health following the Covid-19 pandemic (e.g., He & Jin, 2022). Correspondingly, researchers proposed mental health determinants to cope with the successive psychological problems and enhance mental well-being based on theory or empirical studies (e.g., Yalçın et al., 2022). Therefore, it is necessary to measure the prevalence and severity of anxiety among vocational college students via well-designed studies to explore students' perceptions of teacher emotional support and their resilience to comprehend the impact of preventive behaviors on anxiety and mental health and identify relevant protective factors to cope with the anxiety efficiently and effectively during the Covid-19 pandemic (Cheng et al., 2020). As such, testing a path model among perceived teacher emotional support, Covid-19 anxiety, resilience and mental well-being at the height of the pandemic crisis and lockdown for the vocational colleges seems both appropriate and timely. The present study explored the relations between teacher emotional support and Covid-19 anxiety, teacher emotional support and mental well-being, Covid-19 anxiety and mental well-being, resilience and Covid-19 anxiety, and resilience and mental well-being. We also studied effects of the mediator of Covid-19 between teacher emotional support and mental well-being, as well as resilience and mental well-being.

Literature review

Teacher emotional support, anxiety, and mental well-being

Support is often identified as a key component of solid relationships and strong psychological health. Theoretically, emotional support is categorized into general and specific

ones. Specific emotional support, according to the sources of support, is also divided into parental support, teachers support, peers support and others (Yasin & Dzulkipli, 2010), which are considered as an essential component of social support. These supports perceived by students have been demonstrated as an important factor to improve students' ability to deal with various difficulties and boost academic performance (e.g., Cao et al., 2020). In practice, several dimensions of teacher support are identified, such as emotional, informational, appraisal, and instrumental support (Federici & Skaalvik, 2014).

Teacher emotional support is a critical factor for students in their life, as it has been shown to have significant impact on psychological health. Except for daily support at schools, teacher emotional support also comes in the form of warmth, trust, respect, love and care when students are confronted with various reverse situations (e.g., Lakey & Cohen, 2000). A large number of literature showed that teacher emotional support is a protective element that can help students who were socially anxious to reduce psychological problems, such as loneliness, depression and anxiety (Federici & Skaalvik, 2014; Yang et al., 2018).

Some studies showed that teacher emotional support was a buffer for anxiety and helped manage psychological problems (Cao et al., 2020; Yalçın et al., 2022; Yang, 2020). Elliot and Gramling (1990) for example found that teacher emotional support helped the college students to cope with and lessen anxiety. Yang (2020) empirically showed that support from family members, friends and teachers was negatively related with anxiety among vocational college students. Other studies also found that anxiety happened more frequently to vocational college students who were in short of support than those with desired support (e.g., Zhang, 2019). There are also studies about teacher emotional support on anxiety caused by the burden of academic workload (Villanova & Bownas, 1984). For example, perceived teacher emotional support in mathematics lessons reduced the impact of anxiety on math achievement among students (Federici & Skaalvik, 2014).

Reversely, there are certain differences in the results and degrees of the impact of students' perceived teacher support on anxiety, as the levels of anxiety may also depend on the levels of the support perceived or experienced by individuals. Or in other words, a greater level of anxiety may have a more negative impact on one's perception of teacher emotional support. Munir and Jackson (1997) reported that socially anxious women have been shown to be eager for a higher level of social support, but to be reported to perceive lower levels of social support than non-anxious women.

A substantial number of studies have also demonstrated a close relation between teacher emotional support and psychological health (e.g., Yasin & Dzulkipli, 2010). The previous studies showed that teacher emotional support was positively

related with mental well-being and tended to directly enhance students' happiness and satisfaction. When teacher emotional support was perceived as resultant feelings of belonging, relatedness, safeness and other positive emotional experiences, it explained positive impact on students' well-being (Baumeister & Leary, 1995). While other researches demonstrated the indirect effect from teacher emotional support on mental well-being through decreasing the negative and unpleasant emotional experience (Anser et al., 2021).

However, there are rare studies exploring whether and how perceived teacher emotional support can influence Chinese vocational college students' anxiety during the Covid-19 pandemic. The extent to which perceived teacher emotion support has effect on Chinese vocational college students' mental well-being is yet to be studied. Based on the previous literature, the study aimed to exam how and to what extent perceived teacher emotional support exerts its effects on Covid-19 anxiety and mental well-being among vocational college students in Chinese educational context, and the following hypotheses are put forward.

H₁: Perceived teacher emotional support is negatively related to Covid-19 anxiety.

H₂: Perceived teacher emotional support has a positive effect on students' mental well-being (MWB).

Anxiety and mental well-being

Mental well-being is considered to be a general psychological factor reflecting people's physical health, psychological health, and social adaption (Munir & Jackson, 1997). Based on the bottom-up model, the negative emotion of anxiety experienced by individuals may cause the decrease in quality of the whole life (Poole et al., 2017; Stallings et al., 1997). Conversely, empirical studies have shown that college students who enjoyed a higher sense of happiness tended to have lower depression compared with their peers. Anxiety is generally described as typically emotional, cognitive, and behavioral responses to threat, disaster and other unfamiliar environments. Thus, it may be the most common response pattern to the pandemic crisis among vocational college students. Covid-19 anxiety increases the incidence of psychological problems, and poses threats to mental well-being of college students across countries (Cao et al., 2020; Wang et al., 2021). The existing evidences showed that Covid-19 anxiety was negatively related to well-being (e.g., Yıldırım & Arslan, 2022). It increases the negative impact of adverse events on mental well-being. Studies also demonstrated that people who had experienced natural disasters tended to live with poor mental health (Qiu et al., 2020; Tan et al., 2021), and the same was true for the vocational college students going through the pandemic.

Aforementioned literature described the relationship between anxiety and mental well-being, but less was known about how Covid-19 anxiety amplified or ameliorated mental well-being. This study tends to make use of a testing model to exam the extent to which Covid-19 anxiety exerts the influence on mental well-being and how Covid-19 anxiety influences mental well-being and the relation between teacher emotional support and mental well-being to provide theoretical basis for the protective strategies. The following hypothesis is put forward.

H₃: The Covid-19 anxiety negatively predicts mental well-being.

Resilience, anxiety, and mental well-being

Resilience is generally considered as a protective factor to decrease the level of distress (Cheng et al., 2020; Gundogan, 2021) or a kind of ability to survive or even thrive in an adverse or changing circumstances (e.g. Smith et al., 2008). It is closely related with people's thriving and thus has an obviously positive influence on not only individual development but also personal emotions. Research has shown that resilience is an important psychological resource that can lessen people's anxiety emerging from life's adversities in different disciplines and cultures (Yang et al., 2018). Constant studies also revealed resilience exerted positive effects on a variety of mental health and well-being during the pandemic (e.g., Arslan, 2019).

The resilience interventions have been revealed to help protect college students from various mental disorders and make them keep in good mental conditions (e.g., Millea et al., 2008). The previous studies have widely reported that the levels of resilience were positively related to the extent of the quality of life which was one of the key factors reflecting mental well-being (Arslan, 2019; Lioussis et al., 2009). Liu et al. (2019) found that students with stronger resilience had a lower level of depression which resulted from the stress of negative events, while Poole et al. (2017) found that resilience contributed to the mental health of adults who experienced abuse in childhood. Most recently, two studies of health care staff and college students respectively showed that individuals with stronger resilience experienced lower depression during the Covid-19 pandemic than those with weaker resilience (Labrague & De los Santos, 2020; Luceño-Moreno et al., 2020).

Based on the previous research, it is found that resilience has not been measured in vocational college students in relation to Covid-19 anxiety and mental well-being. This study aims to exam the variables of resilience, Covid-19 anxiety and mental well-being in relation to one another for proposing protective factors for improving vocational college students' mental well-being during the critical times. The following hypotheses are put forward.

H₄: Resilience is negatively related with Covid-19 anxiety.

H₅: Resilience is positively related with mental well-being.

Mediating role of anxiety

Anxiety is identified as a sustained mental health problem and closely related to support and mental well-being. Some studies proved that anxiety mediated the relationship between support and mental well-being (e.g., Guo et al., 2020). Social support affected students' mental well-being not only directly but also through anxiety. Huang et al. (2021) explored the mediating mechanism in the relationship between social support and mental well-being, and found that anxiety partly mediated the association between them. Guo et al. (2020) also demonstrated that teacher support was indirectly associated with mental well-being via negative emotions (e.g., depression, anxiety and stress) among adolescents.

In the literature, much attention was paid to the mediating effect of anxiety between resilience and well-being. Gundogan (2021) empirically identified fear of COVID-19 as a potential mediator in the relationship between resilience and life satisfaction. However, few studies examined whether anxiety mediated the relationship between resilience and well-being. Surzykiewicz et al. (2021) examined the mediating effect of Covid-19 anxiety in the link between resilience and mental well-being in the Polish population.

Based on the extant literature, the present study aims to exam whether the Covid-19 anxiety mediates the relationship between perceived teacher emotional support and mental well-being, and that between resilience and mental well-being. The following hypotheses are put forward.

H₆: Covid-19 anxiety mediates the relationship between perceived teacher emotional support and mental well-being.

H₇: Covid-19 anxiety mediates the relationship between resilience and mental well-being.

Teacher emotional support, resilience, and mental well-being

Amount of literature revealed that resilience is closely related with perceived support, well-being, academic achievement, coping behaviors and the other aspects concerned with psychology (Hu et al., 2018; Yasin & Dzulkipli, 2010). Some studies demonstrated the interrelationship between social support and resilience in practical application. In fact, being able to turn to others for support is a key component of being resilient which like wise can be enhanced by various protective behaviors, such as social

support (Yang et al., 2018). Ye et al. (2022) examined the relation between perceived parental support and resilience among college students during Covid-19 and found that there was a significantly positive correlation between them. A bi-directional relationship has been identified between teacher emotional support and resilience (e.g., Labrague & De los Santos, 2020). They enhance each other and subsequently lead to better emotional and psychological adjustment. In addition, resilience partially played a moderating role but an intermediary role between anxiety and emotional support (Hu et al., 2018), while teacher emotional support exerted both direct and indirect influence on mental health to reduce anxiety and improve well-being because of its direct relation with mental emotions (Ryan & Deci, 2000).

It also has been well demonstrated that both resilience and social support exerted a direct influence on anxiety and well-being (Federici & Skaalvik, 2014). Recent studies showed that perceived social support and resilience were factors for promoting the prosperity of mental health under increasing anxiety (e. g., Hu, et al., 2018). They both directly related to psychological problems and reduced the levels of anxiety (Hu et al., 2018). It is even revealed that perceived social support, resilience and mental well-being have great influence on psychological anxiety among university students (Elliot & Gramling, 1990).

The extant literature revealed that although some studies explored the relations between support and resilience, more research was focused on social support and the mediating effects of the both variables were examined. In such, this study examines the relationship between resilience and perceived teacher emotional support among vocational college students during specific period of the pandemic, and explores how and to what extent they influence anxiety and mental well-being in order to provide theoretical base for making suggestions to reduce anxiety and promote mental well-being among vocational college students during emergent times.

Present study

The literature has addressed the relationship among variables of teacher emotional support, resilience, Covid-19 anxiety and mental well-being. However, few literature focus on the phenomenon that Chinese vocational college students tend to be more vulnerable in times of crisis. The present study aimed to explore whether teachers in vocational colleges provide students with effective support for coping with psychological problems and check if resilience could be chosen as an alternative way to help students deal with Covid-19 anxiety to foster mental well-being. The study also examined the mediating effects of Covid-19 anxiety in the relationship between teacher emotional support and mental well-being, and that between resilience and mental well-being to assess the influence of Covid-19 anxiety on the construction of

mental well-being of vocational college students. Corresponding strategies were proposed for teachers to provide effective and sufficient support for Chinese vocational college students to cope with psychological problems and facilitate college students' mental well-being. The framework and hypotheses of the research are presented as in Fig. 1.

Method

Participants

The participants of the study were composed of 1469 Chinese vocational college students, consisting of freshmen, sophomores, and juniors, 582 (39.6%) females and 887 (60.3%) males. This was a convenient sample legitimating for statistical analysis (Coladarci & Cobb, 2013). All participants filled out a consent form and participated in the study between March and April 2022 when vocational colleges were locked down because of outbreak of Covid-19. In China, most vocational college students study and live on campus dormitories. In such, their couldn't go out dating with limited social activities and their entertainment was restricted to campus because of the lockdown. The vocational college students surveyed in this study have a three-year academic system with study during the first two years and practice in enterprises in the third year. All of the participants were selected to voluntarily fill out the online survey package. Four contact teachers responsible for managing students affairs in vocational college shared the link of the questionnaire and informed the purpose of the study. They were granted the right to give up answering the questions or withdraw while answering the questions at any time. The confidentiality of their data was ensured. Finally, a sample of 1469 was valid after deleting those which were unfinished or noncompliance with requirements. Among the 1469 participants, 1170 (79.6%) were freshmen; 239 (16.3%) were sophomores and 59 (4.0%) were juniors. Their family incomes varied: 46.8% with income below 50,000 yuan, 25% with income from 50,000 to 60,000, 16.2% with income from 60,000 to 100,000, and 12% with income over 100,000.

Measures

Teacher Emotional Support (TES) Students' perceptions of the teachers emotional support were measured by the modified Teacher Emotional Support, the original scale of which has been previously tested (Federici & Skaalvik, 2014; Skaalvik & Skaalvik, 2013). It was composed of six items designed to gauge students' feelings of being liked, respected, and valued by teachers during the pandemic, which was considered as students' perceived emotional dimension of the teacher-student relationship (Federici & Skaalvik, 2014). For instance,

the item of "I feel that my math teacher cares about me." and "My math teacher wants what is best for me." were included in the questionnaire. The response categories for all items were ranged on a 5-point scale from 1 (not applicable to me) to 5 (very applicable to me). In the current sample, Cronbach's alpha for the entire questionnaire was 0.907.

Brief Resilience Scale (BRS) The Brief Resilience Scale (BRS) (Smith et al., 2008) was modified into Covid-19 context for measuring participants resilience. It was composed of six items to assess an individual's ability to bounce back after the negative influence of epidemic. The extent to which participates thought the items were applicable to them ranged from 1 (not applicable to me) to 5 (very applicable to me). Three items were reverse scored for the scale, including "I have a hard time making it through Covid-19 lockdown", "It is hard for me to snap back when something bad happens during Covid-19 period", and "I tend to take a long time to get over set-backs caused by Covid-19". Thus, the BRS was scored by reverse coding the three items. The scale was proved to have an adequate reliability ($\alpha=0.707$).

Covid-19 Anxiety Scale (CAS) Covid-19 Anxiety Scale (CAS) (Silva et al., 2022), consisted of seven items, which was designed to accurately measure/gauge the fluctuant psychology in anxiety levels caused by Covid-19. Five-likert scoring method was used ranging from 1 (not applicable to me) to 5 (very applicable to me) to indicate how much each item applied to their behavior during the pandemic period. A total of the seven items, such as "I feel bad when thinking about Covid-19", "I feel anxious about Covid-19 anxiety" and "I am afraid of being infected with Covid-19", were reversed into Chinese context. Two experts were invited to checked the content of the CAS and showed agreement on its suitability for Chinese vocational college students. In the current sample, Cronbach's alpha for the entire questionnaire was 0.932, showing an adequate reliability.

Mental Well-being (MWB) MWB was assessed using the World Health Organization's 5-item Well-being Index (WHO-5) which is a short and generic global rating scale, only containing positively phrased items. While WHO considers positive well-being to be another term for mental health (Jahoda, 1958), this study adopted WHO-5 to measure the mental well-being. The participants expressed their attitude toward each of the statements on a 5-point scale ranging from 1 (not applicable to me) to 5 (very applicable to me). The WHO-5 has been examined by the item response theory model formulated by Rasch (Rasch, 2012), and measured in different European countries and in clinical trials, and proved good reliability and validity (e.g., Surzykiewicz et al., 2021). When the WHO-5 was used in the current sample, the result of the scale showed good reliability ($\alpha=0.893$).

Analytical procedures

In the present study, SPSS22.0 was applied to check the validity of each scale by exploratory factor analysis (EFA) and then obtain Cronbach's alpha. The normality of data distribution was assessed by skewness (SK) and kurtosis (KU). Descriptive analysis procedures (mean, standard deviation) were performed for all the studied variables. And then Pearson correlation analysis was to explore associations between various variables (TES, CBRS, CAS and MWB). After that, the model of path analysis was established on the results of previous analysis. Then, Mplus was adopted to construct paths and their results were interpreted using standardized path estimate (β) scores and squared multiple correlations (R^2) to explore the relations among variables and check if Covid-19 mediated the relationship between teacher emotional support and mental well-being and that between resilience and mental well-being. In addition, the bootstrap method with 5000 resamples was used to estimate the 95% confidence intervals (CIs) to investigate the indirect effect between variables (Hayes, 2017) in the study.

Results

Descriptive and Pearson's correlation results

The skewness coefficients of TES, Resilience, Covid-19 anxiety, and MWB were -0.495, 0.695, 0.598, -0.385 and the kurtosis coefficients were -0.272, 0.357, -0.272, -0.464, falling between -1 and 1. The data was good for analysis with a robust estimate (Lei, 2005; Muthen & Kaplan, 1985). The means, standard deviations, scale reliabilities, and Pearson correlations for teacher emotional support, Covid-19 anxiety, resilience, and mental well-being are presented in Table 1. It shows that teacher emotional support is positively correlated with mental well-being ($\beta=0.809, p<0.001$) and resilience ($\beta=0.351, p<0.001$). However, it has negative relation with Covid-19 anxiety to some extent ($\beta=-0.041, p>0.05$). A negative and strong relationship was observed between Covid-19 anxiety and mental well-being ($\beta=-0.143, p<0.001$). Resilience is negatively associated with Covid-19 anxiety ($\beta=-0.352, p<0.001$) but has positive correlation with mental well-being ($\beta=0.391, p<0.001$).

Model of path analysis

After the descriptive statistics, path analysis model was constructed to examine the relations between teacher emotional support and Covid-19 anxiety, teacher emotional support and mental well-being, Covid-19 anxiety and mental well-being, resilience and Covid-19 anxiety, and resilience and

mental well-being. The path from teacher emotional support to Covid-19 anxiety to mental well-being and another path from resilience to Covid-19 anxiety to mental well-being was also constructed.

As presented in Fig. 2, the results of the path model showed that teacher emotional support (TES) was a significant positive predictor for mental well-being (MWB) but showed direct positive effect on Covid-19 anxiety. Covid-19 anxiety was a buffer for mental well-being. Resilience was a promoter for mental well-being but negatively related to Covid-19 anxiety. As showed in Table 2, TES significantly predicted mental well-being with direct positive path to it ($\beta=0.773, p<0.001$), while it exerts direct positive effect on Covid-19 anxiety ($\beta=0.094, p<0.001$) which in turn had a significant negative path to mental well-being ($\beta=-0.078, p<0.001$). On the other hand, resilience showed significant paths to Covid-19 anxiety, mental well-being and teacher emotional support. In details, it had a significant positive path to mental well-being ($\beta=0.092, p<0.001$) and a significant negative path to Covid-19 anxiety ($\beta=-0.386, p<0.001$). Finally, teacher emotional support and resilience were significantly inter-related and the double paths between them were significant ($\beta=0.351, p<0.001$). The squared multiple correlation of Covid-19 anxiety is 0.133 ($R^2=0.133$) and that of the mental well-being is 0.672 ($R^2=0.672$).

Furthermore, there were statistically significant mediating effects of Covid-19 anxiety among vocational college students as the path model was constructed with teacher emotional support and resilience as independent variables, Covid-19 anxiety as mediator and mental well-being as dependent variable. The first path is from teacher emotional support to Covid-19 anxiety to mental well-being ($\beta=-0.007, p<0.01$), that is, teacher emotional support significantly predicted mental well-being indirectly through Covid-19 anxiety. The total effect from teacher emotional support to mental well-being was significant ($\beta=0.016, p<0.001$). Thus Covid-19 anxiety partially mediated the relation between teacher emotional effect and mental well-being. The second path is from resilience to Covid-19 anxiety to mental well-being ($\beta=0.030, p<0.01$), that is, resilience significantly predicted mental well-being indirectly through Covid-19 anxiety. The total effect from resilience to mental well-being was significant ($\beta=-0.294, p<0.001$). Thus Covid-19 anxiety partially mediated the relation between resilience and mental well-being.

Discussion

The present study examined relations among perceived teacher emotional support, resilience, Covid-19 anxiety, mental well-being among vocational college students during the period of the pandemic outbreak. We first

hypothesized that perceived teacher emotional support would have direct effects on Covid-19 anxiety, mental well-being and resilience. Results from the path analysis indicated that perceived teacher emotional support positively predicted both Covid-19 anxiety and mental well-being. Covid-19 anxiety was significantly and negatively related with mental well-being. The second and third hypotheses in the study are supported except for the first one. The results suggested that the more emotional support vocational college students perceived from their teachers, the more mental well-being they would have during the Covid-19 period, and the vocational college students with lower Covid-19 anxiety tended to be more happy and in a better state of mental well-being. These findings were consistent with those of the previous studies (Wang et al., 2021; Yıldırım & Arslan, 2022). The result also indicated that perceived teacher emotional support was significantly and positively predicted Covid-19 anxiety. Vocational college students who perceived teachers' care, warmth and respect felt nervous or even anxious during the period of pandemic outbreak. This finding is consistent with few studies (Munir & Jackson, 1997; Zysberg & Zisberg, 2020) but contrary to many others (Yang et al., 2018; Yasin & Dzulkifli, 2010).

The first hypothesis that teacher emotional support is negatively related to Covid-19 anxiety is not supported in the present study. The reason may be that the present study was carried out in Chinese context among vocational college students almost all of whom are adults and educated to be independent and cope with problems by themselves. They are shy and reluctant to be over cared because of the features of youth age and the deep influence of the old saying "The demands that a gentleman makes are upon himself; those that a mean man makes are upon others" by Confucius (Beijing Sihai Classic Culture Communication Center, 2018).

Based on person-environment fit theory, there is a mutual relationship between the individual and the environment, and vocational college students are worried with not only their study but also future work as soon as they entered colleges, as they are enrolled into colleges because of their lower academic achievement in the nationwide College Entrance Examination and two years of courses at vocational college is much shorter than that of other types of higher education. Thus, teachers are suggested to recognize which types of emotional support is most strongly associated with Covid-19 anxiety and construct a supportive environment that meets vocational college students multiple needs.

On the other hand, teachers disregard of personal and interpersonal factors that potentially moderate teacher-student relationship and oversimplify emotional support. The possible interpretation may be that teachers show unexpected concerns about students' psychological health and physical health, or pay extremely more attention to vocational college students during the pandemic. Therefore, students

may suppose that the pandemic is worse. They become more concerned about their family, doubt about their psychological health and physical health and thus feel uneasy (Elliot & Gramling, 1990). Thus the perceived teacher emotional support turn out to be a source of Covid-19 anxiety. Teachers are suggested to take into consideration of the interpersonal and personal factors in the process of providing emotional support for vocational college students (He & Jin, 2022).

In addition, the social recognition of vocational education is comparatively low and different types of source of student make perceptions varied. On the other hand, Novice teachers are generally assigned to be in charge of vocational college students management. Therefore they have to strengthen students management under greater pressure (Lin, 2022), and are over concerned with students affairs especially during the early phase of pandemic outbreak. But excessive emotional support makes vocational students experience more controlled environment which undermines self-determination and increases psychological problems (Karimi & Fallah, 2021; Ryan & Deci, 2000). Coyne and DeLongis (1986) also argued that excessive involvement, protectiveness, and intrusiveness in teacher-student relationship were very distressing and increased anxiety. Vocational colleges should consider organizing trains for novice teachers to empower them skills in comprehensive integration of education and management.

Next, the findings of the present study empirically confirmed the hypothesis that resilience has a direct and significant effect on both Covid-19 anxiety and mental well-being. The results showed that vocational college students with higher resilience tend to feel less anxious and have higher mental well-being, which indicated that resilience could reduce the level of Covid-19 anxiety and play an importantly protective role in psychological health and mental well-being. Thus, vocational college students with high levels of resilience feel better quickly after unpleasant experiences or return to original life after being hurt caused Covid-19. As a result, the fourth and fifth hypotheses were both supported in the study. The findings obtained in this study are also supported by the results of other studies in the literature (e.g., Cheng et al., 2020; Yang et al., 2018). Millier et al. (2008) found that high levels of resilience improved mental health and well-being. Teachers in vocational colleges should carry out valuable activities with diversity, rich forms and strong attraction to help students build up resilience which is a critical tool to facilitate emotional regulation among Chinese vocational college students (Cheung et al., 2020).

Finally, it is worthy to note that the present study showed Covid-19 anxiety mediated both relationships between teacher emotional support and well-being, and between resilience and mental well-being. The sixth and seventh hypotheses were supported. The results were consistent with some previous studies (e.g., Gundogan, 2021; Guo et al., 2020). The results also proved that

perceived teacher emotional support and resilience had a close relation with each other. Teacher emotional support helps vocational college students build up resilience and reversely, resilience helped promote students' perception of the support from teachers. The previous study also showed that support significantly correlated with resilience (Yang et al., 2018; Ye et al., 2022). In addition the findings in the study showed that the Covid-19 anxiety has a partial mediating role in the relationships between teacher emotional support and mental well-being, as well as between resilience and mental well-being, that is, both teacher emotional support and resilience have effects on Covid-19 anxiety and Covid-19 anxiety affects mental well-being. There is no study in the literature directly supporting the results of this study except for similar findings. Gundogan (2021) found that the fear of COVID-19 had a mediating role in the relationship between psychological resilience and life satisfaction. Tan et al. (2021) showed that resilience and environmental stress indeed affected college students' well-being during the pandemic. Thus, it can be argued that mental well-being may be strengthened during the pandemic by direct and indirect influence from teacher emotional support and resilience. Therefore, teachers should provide emotional support for vocational college students to enhance their resilience ability, especially during emergent period.

Implication

People can be at great risk of psychological problems and mental health during Covid-19 pandemic. The present study constructed a path model to explore multiple paths from teacher emotional support and resilience on mental well-being.

First, the present study identified teacher emotional support as a prominently protective factor in promoting mental well-being in times of crisis, but increased negative impact of anxiety among Chinese vocational college students during pandemic if teachers showed concerns and warmth to students in a tangible way. Therefore, college teacher should be encouraged to utilize strategies when providing affective emotional support for students to reduce their anxiety and enhance their mental well-being during challenging period.

Second, the study demonstrated the importance of resilience in buffering Covid-19 anxiety and flourishing mental well-being. Resilience should be targeted at intervention and prevention for negative affects caused by unexpected incidents. According to the results, teachers are proposed to organize educational programs and conduct psychologically supportive activities to increase the psychological resilience and reduce the negative effects of Covid-19 anxiety among vocational college students.

Third, the result showed that teacher emotional support and resilience strengthened and promoted each other among the Chinese vocational college students during the crisis, and they are both crucial in helping vocational college students build up mental well-being. In view of extrapolating perceived teacher support to social and parental support for a strong social support network, we suggest that teachers strengthen communication with students' parents and appeal for more supports from parents, society and government to help vocational college students develop emotional regulation strategies, improve adoptive ability and enhance resilience, which boosts students' protective strategies against psychological problems and consequently improves mental well-being on a large scale during pandemic crisis.

Limitations

The paper suffered from several limitations. At first, significant positive relation between perceived teacher emotional support and COVID 19 anxiety was demonstrated because of particularity of management in vocational college, so a increased sample is needed to explore the phenomena in other colleges to testify whether their relation is influenced by Chinese culture or students' majors. What's more, we conducted the survey by collecting data through releasing online questionnaire, which is vulnerable to subjective judgment of socially desirable bias and personal desires. In addition, although we recommended usable suggestions, they may be restricted to Chinese vocational colleges. Other scholars can offer advice which is applicable to different cultural contexts.

Conclusion

The present study found that perceived teacher emotional support increased students' anxiety if it was managed improperly by teachers during the Covid-19 pandemic period but it significantly promoted mental well-being. Resilience reduced vocational college students Covid-19 anxiety and was a crucial protector for mental well-being. In addition, perceived teacher emotional support and resilience were closely related and they developed and promoted each other. Both teacher emotional support and resilience affected mental well-being directly and indirectly through the effect of Covid-19 on mental well-being. The study showed a frame for perceived teacher emotional support, Covid-19 anxiety, resilience and mental well-being, and provided us intervention programs for psychological problems to enhance happiness during public health crisis, such as Covid-19 pandemic.

Appendix

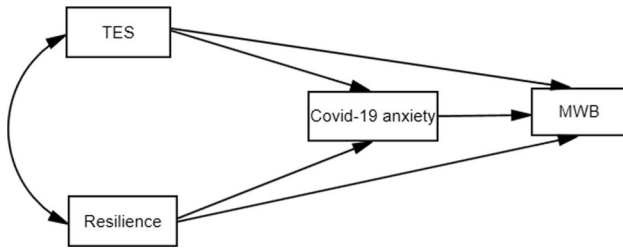


Fig. 1 Conceptual mediation model

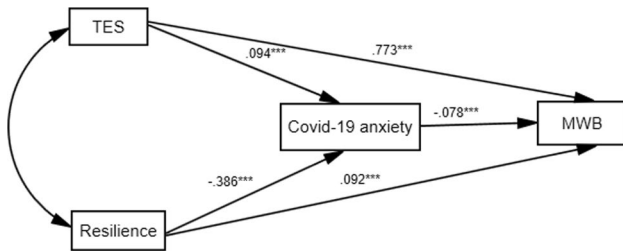


Fig. 2 Results of the study model. Note: *** $p < 0.001$

Table 1 Descriptive statistics and correlation results

Variables	M	SD	α	1	2	3	4
Teacher emotional Support	22.085	6.456	0.907	-			
Resilience	21.028	3.795	0.707	0.351**	-		
Covid-19 anxiety	15.560	6.903	0.932	-0.041	-0.352**	-	
Mental well-being	18.107	5.527	0.893	0.809**	0.391**	-0.143**	-

** $p < 0.01$

Table 2 Standardized direct and indirect effects for the model

Model pathways	Estimated	95%-confidence interval	
		Lower	Upper
Direct effect			
TES—Covid-19 anxiety	0.094	0.034	0.151
TES—MWB	0.773	0.742	0.805
Covid-19 anxiety—MWB	-0.078	-0.112	-0.047
Resilience—Covid -19 anxiety	-0.386	-0.434	-0.335
Resilience—MWB	0.092	0.056	0.131
Indirect effect			
TES—Covid-19 anxiety—MWB	-0.007	-0.013	-0.003
Resilience-Covid-19 anxiety- MWB	0.030	0.018	0.044

$N = 1469$; TES Teacher emotional support; MWB Mental well-being

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s12144-022-04112-9>.

Data availability The data used in this study has been uploaded as supplementary material to Current Psychology. So reviewers can obtain data by contacting the editor.

Declarations

Ethical issue and consent form claims On the title page since there are author's institution listed on it.

Ethical issue Before data collection, we submitted an approval of this study to the institute office of Shandong Polytechnic College and the administrators agreed on the data collection after reviewing the proposal. During the data collection, the contact teachers of the study explained to the participants that they were granted confidence to withdraw or give up answering the questionnaire. Consent form was submitted to all the participants by four contact teachers. All participants agreed with this study.

Conflict of interest The authors claim that there is no any potential conflicts of interest.

References

- Amerio, A., Bianchi, D., Santi, F., Costantini, L., Odone, A., Signorelli, C., ..., & Aguglia, A. (2020). Covid-19 pandemic impact on mental health: A web-based cross sectional survey on a sample of Italian general practitioners. *Acta Biomedica Atenei Parmensis*, *91*(2), 83–88. <https://doi.org/10.23750/abm.v91i2.9619>
- Anser, M., Saddique, A., Chong, S. C., Almas, A., & Munir, S. (2021). Impact of perceived social support, resilience, and subjective well-being on psychological distress among university students: Does gender make a difference? *The International Journal of Academic Research in Business and Social Sciences*, *11*, 27–41.
- Arslan, G. (2019). Mediating role of the self-esteem and resilience in the association between social exclusion and life satisfaction among adolescents. *Personality and Individual Differences*, *151*, 109514. <https://doi.org/10.1016/j.paid.2019.109514>
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong-desire for interpersonal attachments as a fundamental human-motivation. *Psychological Bulletin*, *117*(3), 497–529. <https://doi.org/10.1037/0033-2909.117.3.497>
- Beijing Sihai Classic Culture Communication Center. (2018). *The Analects of Confucius* (pp. 108), Beijing, Huaxia Publishing House. In Chinese
- Borkovec, T. D. (2002). Life in the future versus life in the present. *Clinical Psychology: Science and Practice*, *9*(1), 76–80.
- 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. *The Lancet*, *395*, 10227. [https://doi.org/10.1016/S0140-6736\(20\)30460-8](https://doi.org/10.1016/S0140-6736(20)30460-8)
- Burns, D., Dagnall, N., & Holt, M. (2020). Assessing the Impact of the Covid-19 pandemic on student wellbeing at universities in the united kingdom: A conceptual analysis. *Frontiers in Education*, *5*, 204–214. <https://doi.org/10.3389/educ.2020.582882>
- Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological impact of the Covid-19 epidemic on college students in China. *Psychiatry Research*, *287*, 112934. <https://doi.org/10.1016/j.psychres.2020.112934>
- Cheng, J., Zhao, Y. Y., Wang, J., & Sun, Y. H. (2020). Academic burnout and depression of Chinese medical students in the pre-clinical years: The buffering hypothesis of resilience and social support. *Psychology, Health & Medicine*, *25*(9), 1094–1105. <https://doi.org/10.1080/13548506.2019.1709651>
- Cheung, S., Xie, X., & Huang, C. (2020). Mind over matter: Mindfulness, income, resilience, and life quality of vocational high school students in China. *International Journal of Environmental Research and Public Health*, *17*, 5702. <https://doi.org/10.3390/ijerph17165701>
- Coladarci, T., & Cobb, C. D. (2013). *Fundamentals of Statistical Reasoning in Education* (4th ed.). Wiley.
- Coyne, J., & DeLongis, A. (1986). Going beyond social support: The role of social relationships in adaptation. *Journal of Consulting and Clinical Psychology*, *54*, 454–460. <https://doi.org/10.1037/0022-006X.54.4.454>
- Diener, E., Oishi, S., & Tay, L. (2018). Advances in subjective well-being research. *Nature Human Behaviour*, *2*, 253–260. <https://doi.org/10.1038/s41562-018-0307-6>
- Elliot, T. R., & Gramling, S. E. (1990). Personal assertiveness and the effects of social support among college students. *Journal of Counseling Psychology*, *37*(4), 427–436. <https://doi.org/10.1037/0022-0167.37.4.427>
- Federici, R. A., & Skaalvik, E. M. (2014). Students' perception of instrumental support and effort in mathematics: The mediating role of subjective task values. *Social Psychology of Education*, *17*, 527–540. <https://doi.org/10.1007/s11218-014-9264-8>
- Gundogan, S. (2021). The mediator role of the fear of COVID-19 in the relationship between psychological resilience and life satisfaction. *Current Psychology*, *40*(12), 6291–6299. <https://doi.org/10.1007/s12144-021-01525-w>
- Guo, J., Liu, L., Zhao, B., & Wang, D. (2020). Teacher support and mental well-being in Chinese adolescents: The mediating role of negative emotions and resilience. *Frontiers in Psychology*, *10*, 3081. <https://doi.org/10.3389/fpsyg.2019.03081>
- Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Publications.
- He, L. W., & Jin, Y. J. (2022). Challenges faced by ideological and political education in colleges under the “epidemic information” and the countermeasures. *College Instructor*, *4*(75), 19–24.
- Hu, T., Xiao, J., Peng, J., Kuang, X., & He, B. (2018). Relationship between resilience, social support as well as anxiety/depression of lung cancer patients: A cross-sectional observation study. *Journal of Cancer Research and Therapeutics*, *14*, 72–77. https://doi.org/10.4103/jcrt.JCRT_849_17
- Huang, Z., Zhang, L., Wang, J., Xu, L., Liu, Z., Wang, T., ..., & Lu, H. (2021). Social support and subjective well-being among post-graduate medical students: The mediating role of anxiety and the moderating role of alcohol and tobacco use. *Heliyon*, *7*(12), 8621. <https://doi.org/10.1016/j.heliyon.2021.e08621>
- Jahoda, M. (1958). *Current Concepts of Positive Mental Health*. Basic Books Publisher.
- Karimi, M. N., & Fallah, N. (2021). Academic burnout, shame, intrinsic motivation and teacher affective support among Iranian EFL learners: A structural equation modeling approach. *Current Psychology*, *40*, 2026–2037. <https://doi.org/10.1007/s12144-019-0138-2>
- Labrague, L. J., & De los Santos, J. A. A. (2020). Covid-19 anxiety among front-line nurses: Predictive role of organizational support, personal resilience and social support. *Journal of Nursing Management*, *28*(7), 1653–1661. <https://doi.org/10.1111/jonm.13121>
- Lakey, B., & Cohen, S. (2000). Social support theory and measurement. In S. Cohen, L. G. Underwood, & B. H. Gottlieb (Eds.), *Social support measurement and intervention: A guide for health and social scientists* (pp. 29–52). Oxford University Press. <https://doi.org/10.1093/med:psych/9780195126709.003.000210>
- Lei, M. (2005). The effect of varying degrees of nonnormality in structural equation modeling. *Structural Equation Modeling*, *12*(1), 1–17. https://doi.org/10.1207/s15328007sem1201_1
- Lin, P. H. (2022). The current management of vocational colleges students under the background of diversified student sources and optimization strategy. *Western China Quality Education*, *8*(10), 173–175.

- Lioussis, P. L., Shochet, I. M., Milllear, P. M., & Biggs, H. (2009). The promoting adult resilience (PAR) program: The effectiveness of the second, shorter pilot of a workplace prevention program. *Behaviour Change*, 26, 97–112. <https://doi.org/10.1375/behc.26.2.97>
- Liu, W., Zhou, L., Wang, X., Yang, B., Wang, Y., & Jiang, J. (2019). Mediating role of resilience in relationship between negative life events and depression among Chinese adolescents. *Archives of Psychiatric Nursing*, 33(6), 116–122. <https://doi.org/10.1016/j.apnu.2019.10.004>
- Luceño-Moreno, L., Talavera-Velasco, B., García-Albuérne, Y., & Martín-García, J. (2020). Symptoms of post-traumatic stress, anxiety, depression, levels of resilience and burnout in Spanish health personnel during the Covid-19 pandemic. *International Journal of Environmental Research and Public Health*, 17(15), 5514. <https://doi.org/10.3390/ijerph17155514>
- Milllear, P., Lioussis, P., Shochet, I. M., Biggs, H., & Donald, M. (2008). Being on PAR: Outcomes of a pilot trial to improve mental health and well being in the workplace with the Promoting Adult Resilience (PAR) program. *Behavior Change*, 25, 215–228. <https://doi.org/10.1375/behc.25.4.215>
- Munir, S. S., & Jackson, D. W. (1997). Social support, need for support and anxiety among women graduate students. *Psychological Reports*, 80(2), 383–386. <https://doi.org/10.2466/pr0.1997.80.2.383>
- Muthen, B., & Kaplan, D. (1985). A comparison of some methodologies for the factor analysis of non-normal Likert variables. *British Journal of Mathematical and Statistical Psychology*, 38, 171–180. <https://doi.org/10.1111/j.2044-8317.1985.tb00832.x>
- Poole, J. C., Dobson, K. S., & Pusch, D. (2017). Childhood adversity and adult depression: The protective role of psychological resilience. *Child Abuse & Neglect*, 64, 89–100. <https://doi.org/10.1016/j.chiabu.2016.12.012>
- Qiu, J., Shen, B., Zhao, M., Wang, Z., Xie, B., & Xu, Y. (2020). A nationwide survey of psychological distress among Chinese people in the Covid-19 epidemic: Implications and policy recommendations. *General Psychiatry*, 33(2), e100213. <https://doi.org/10.1136/gpsych-2020-100213>
- Rasch, G. (2012). From Guttman's pioneer work to item response theory analysis (IRT). In *Bech (ed): Clinical Psychometrics*. Oxford, Wiley-Blackwell
- Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, 25, 54–67. <https://doi.org/10.1006/ceps.1999.1020>
- Silva, W. A. D., de Sampaio Brito, T. R., & Pereira, C. R. (2022). Covid-19 anxiety scale (CAS): Development and psychometric properties. *Current Psychology*, 41(8), 5693–5702. <https://doi.org/10.1007/s12144-020-01195-0>
- Skaalvik, E. M., & Skaalvik, S. (2013). School goal structure: Associations with students' perceptions of their teachers as emotionally supportive, academic self-concept, intrinsic motivation, effort, and help seeking behavior. *International Journal of Educational Research*, 61, 5–14. <https://doi.org/10.1016/j.ijer.2013.03.007>
- Smith, B. W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Bernard, J. (2008). The brief resilience scale: Assessing the ability to bounce back. *International Journal of Behavioral Medicine*, 15(3), 194–200. <https://doi.org/10.1080/10705500802222972>
- Stallings, M. C., Dunham, C. C., Gatz, M., Baker, L. A., & Bengtson, V. L. (1997). Relationships among life events and psychological well-being: More evidence for a two-factor theory of well-being. *Journal of Applied Gerontology*, 16(1), 104–119. <https://doi.org/10.1177/073346489701600106>
- Surzykiewicz, J., Konaszewski, K., Skalski, S., Dobrakowski, P. P., & Muszynska, J. (2021). Resilience and mental health in the Polish population during the COVID-19 lockdown: A mediation analysis. *Journal of Clinical Medicine*, 10(21), 4974. <https://doi.org/10.3390/jcm10214974>
- Tan, Y., Huang, C., Geng, Y., Cheng, S. P., & Zhang, S. (2021). Psychological well-being in Chinese college students during the Covid-19 pandemic: Roles of resilience and environmental stress. *Frontiers in Psychology*, 12, 671553. <https://doi.org/10.3389/fpsyg.2021.671553>
- Villanova, P. & Bownas, D. A. (1984). Dimension of college student of the Southeastern Psychological Association. *ERIC Document Reproduction Service*, No. ED262690
- Wang, Z., Luo, S., Xu, J., Wang, Y., Yun, H., Zhao, Z., ..., & Liu, W. (2021). Well-being reduces Covid-19 anxiety: A three-wave longitudinal study in China. *Journal of Happiness Studies*, 22(8), 3593–3610. <https://doi.org/10.1007/s10902-021-00385-2>
- WHO. (2020). *WHO Director-General's opening remarks at the media briefing on Covid-19*. <https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-Covid-19%2D%2D-11-march-2020>. Accessed 25 July 2022 through Qufu Normal University Library
- Xu, J., Ou, J., Luo, S., Wang, Z., Chang, E. C., Claire, N., et al. (2020). Perceived social support protects lonely people against Covid-19 anxiety: A three-wave longitudinal study in China. *Frontiers in Psychology*, 11, 2759–2770. <https://doi.org/10.3389/fpsyg.2020.566965>
- Yalçın, İ., Can, N., Mançe Çalışır, Ö., Yalçın, S., & Çolak, B. (2022). Latent profile analysis of Covid-19 fear, depression, anxiety, stress, mindfulness, and resilience. *Current Psychology*, 41(1), 459–469. <https://doi.org/10.1007/s12144-021-01667-x>
- Yang, C., Xia, M., Han, M., & Liang, Y. (2018). Social support and resilience as mediators between stress and life satisfaction among people with substance use disorder in China. *Frontiers in Psychiatry*, 9(436), 1–7. <https://doi.org/10.3389/fpsyg.2018.00436>
- Yang, J. (2020). Research on the influencing factors on higher vocational students' mental health under the background of big data. *Modern Vocational Education*, 8(2), 100–101. In Chinese.
- Yasin, M. D., & Dzulkipli, M. D. (2010). The relationship between social support and psychological problems among students. *International Journal of Business and Social Science*, 1(3), 110–116.
- Ye, B., Zhao, S., Zeng, Y., Chen, C., & Zhang, Y. (2022). Perceived parental support and college students' depressive symptoms during the Covid-19 pandemic: The mediating roles of emotion regulation strategies and resilience. *Current Psychology*. <https://doi.org/10.1007/s12144-022-03049-3>
- Yıldırım, M., & Arslan, G. (2022). Exploring the associations between resilience, dispositional hope, preventive behaviours, subjective well-being, and psychological health among adults during early stage of Covid-19. *Current Psychology*, 41(8), 5712–5722. <https://doi.org/10.1007/s12144-020-01177-2>
- Zhang, X. H. (2019). Research on the current mental health of vocational college students and intervention measures. *Youth & Society*, 24, 179–180. In Chinese.
- Zysberg, L., & Zisberg, A. (2020). Days of worry: Emotional intelligence and social support mediate worry in the Covid-19 pandemic. *Journal of Health Psychology*, 27(2), 268–277. <https://doi.org/10.1177/1359105320949935>

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