



**ARTICLE**

# College Students' Academic Stressors on Mental Health during the COVID-19 Pandemic: A Comparison between Graduating Students and Non-Graduating Students

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## ABSTRACT

The study aimed to investigate the influence of academic stressors on mental health and the mediating effect of social support and self-identity among college students and further studied the difference between the graduating students and non-graduating students during the COVID-19 Pandemic. Recruiting 900 college students as subjects, used the college students' academic stressors questionnaire, social support questionnaire, self-identity scale and depression anxiety stress scales (DASS-21). The results showed that: (1) The college students' academic stressor positively predicted mental health; (2) Social support and self-identity mediated the relationship; (3) The model also held when academic stressors was replaced by work stressor, but there were differences between the graduating and non-graduating students; (4) The direct effect work stressor on mental health in the graduating group was not significant; (5) The non-graduating students' work stressor could not predict mental health through social support.

## KEYWORDS

COVID-19; work stressor; mental health; social support; self-identity

## 1 Introduction

When the COVID-19 first broke out in Wuhan, China, it went on to sweep across the country and even the world, causing adverse effects on global health, as well as psychological health [1]. The outbreak of COVID-19 and suspending in-person classes lead negative psychological consequence to college students [2]. College was an important turning point and critical period for individuals from adolescence to adulthood in psychology. The college students would encounter lots of problems, making them a highly vulnerable state of getting mental disorders [3,4]. For example, about 20%–30% of college students suffered from mental health issues, such as stress, anxiety and so on [5,6]. And the damaging influence of the COVID-19 will continue impact the mental health of college students [2]. Therefore, it is import to identify the protective factors of mental health, which takes the point step [7].



## **2 Literature Review/Conceptual Framework**

### ***2.1 Academic Stressors and Mental Health***

Mental health was usually manifested by depression, anxiety and stress recently [8–10]. Conejero et al. [11] believed that everyone lived with depression and the prevalence was even higher. Nearly 43–46% of graduate students were depressed [12]. It produced persistent sadness, unhappiness, mood swings, and mental disorders [13]. Anxiety was another common kind of negative emotion that college students usually felt when faced with unpleasant events or challenges [14,15]. Both depression and anxiety were symptoms of physical and mental discomfort. Several studies showed negative effect of mental health during COVID-19 pandemic, associating it with higher anxiety and depression, higher level of psychological distress and lower well-being [16–20]. Besides, stressors and pressures were closely associated with individuals' mental health [21–23]. Hong et al. [24] pointed out that stressors in life firstly affected individual emotion and attitude towards life, then ultimately affected mental health as suggested by the Buffer theory. Among different stressors, academic stressors was the major one for college students [25,26]. Academic stressors referred stressors in an educational environment [27], such as giving a class presentation, solving problems against the clock, and dealing with tests and examinations. Academic stressors had close correlations with mental health [28,29] and the rise of anxiety and depression [8–10]. It was important to figure out the mechanism between academic stressors and mental health.

Different types of students had different mental health symptoms. For example, researchers claimed that undergraduate and graduate students had different mental health symptoms during the COVID-19 pandemic. Specifically, doctoral students had higher overall prevalence of major depressive disorder and generalized anxiety disorder than other types of students [30]. In addition, many universities adopted home-study initiatives during the outbreak of COVID-19. The disruption of course in-person and uncertainty of backing to campus made college students experience poor mental health [31]. Moreover, disruptions of their research projects and internships would jeopardize the process of study, delay their graduation, and undermine their competitiveness on the job market, which would fuel anxiety among college students [2]. So, there might be some differences of the effect stressors on mental health between the graduating students and non-graduating students during the COVID-19.

### ***2.2 Relationships among Academic Stressors, Social Support and Mental Health***

Social support was the general or specific social resources that an individual obtained from others which could help to cope with difficulties and crises in life [32]. Individuals could receive social support online through social media, which could be used for establishing and maintaining support system with friends, families, and community members. For example, reasonable amount of social media usage provided informational, emotional and peer support. And it was beneficial for reducing mental problem during the COVID-19 [33]. Many researches provided evidence that social support was associated with mental health [34–36] and had been long established as a mediator or moderator in the impact on mental health [37–39], which worked as a buffer [40]. In addition, academic stressor significantly negatively correlated with social support [41–44], reflecting someone who had lower support would suffer more academic stress [37,43]. Social support had positive impact on decreasing mental health, as protective role for perceived stress [7]. Thus, hypothesis I was put forward: Academic stressors directly positively predicted mental health, and social support played as a mediator.

### ***2.3 Relationships among Academic Stressors, Self-Identity and Mental Health***

Self-identity was proposed by Erikson [45] which referred to the maturity, continuity and integration of individual personality development, mainly formed in youth. Mental health problems impaired the self-identity of individuals [46–48]. An individual struggled with mental issues, once he had decreased self-confidence and hope for the future [47,49]. Generally, those who had a stronger sense of self-identity

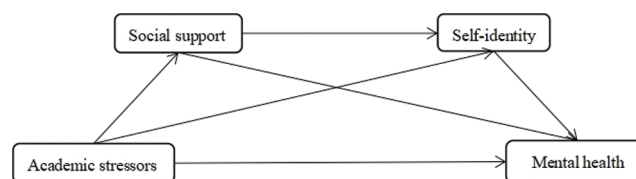
tend to manage the passive emotion and mental symptoms better than those who do not [50]. High self-identity helped to relieve stress and resulted a calming effect on mental health. For college students, academic stressors was reduced through positive evaluation of homework or assignment, leading to a better mental world. Thus, hypothesis II was put forward: Academic stressors directly positively predicted mental health, and self-identity played as a mediator.

#### 2.4 Relationships among Social Support, Self-Identity and Mental Health

Individuals who were at the low level of self-identity, would worry too much about their performance in social, resulting in social anxiety [51,52] and poor mental health [45,53]. Good self-identity mean that people were confident in themselves, and had power to fight with physiological and psychological problems [54]. Meanwhile, self-identity was also closely related to social support [55,56]. If an individual had lower social support, he would suffer self-identity disorder [57]. Better social support provided sources to face difficulties and challenges [58], making better self-identity established, with evaluation of the situation [59]. It had positive effect for an individual to release himself from poor mental health. Therefore, it was reasonable to propose hypothesis III: Social support predicted mental health with self-identity mediating the effect.

#### 2.5 The Current Study

Combining hypothesis I (Academic stressors directly positively predicted mental health, and social support played an indirect mediating role), hypothesis II (Academic stressors directly positively predicted mental health, and self-identity played as a mediator) and hypothesis III (Social support predicted mental health with self-identity mediating the effect), we proposed a model consisting of academic stressors, social support, self-identity and mental health, in which academic stressors had a direct influence on mental health, social support and self-identity playing as mediators. Specifically, mental health negatively associated with social support and self-identity, while positively correlated with academic stressors. In addition, social support and self-identity were both negatively associated with academic stressors. And the two variables positively correlated with each other. See Fig. 1 for details.



**Figure 1:** Hypothesis of mediating effect of academic stressors on mental health of college students

### 3 Method

#### 3.1 Participants

The participants were undergraduates, postgraduates and doctoral students from university in Tianjin. All participants fulfilled the questionnaires online. And there were 900 questionnaires with no missing data included in the present study. The average age of the participants (290 male students and 610 female students) was 21.95 with standard deviation of 3.36.

#### 3.2 Measures

**College students' academic stressors questionnaire.** The academic stressors of college students was measured by college students' academic stressors questionnaire revised by Chen [60]. The questionnaire consisted of 49 questions in 8 factors (work stressor, achievement stressor, task stressor, competitive stressor, obstacle stressor, parental stressor, others' expectation stressor and environmental stressor). Each item was scored from 1 (no stress) to 5 (high stress). The higher the total score was, the more academic

stressors suffered. The reliability of the questionnaire was good (Cronbach's  $\alpha=0.973$ ). The structural validity of the scale in this study was good ( $RMSEA = 0.066$ ,  $CFI = 0.862$ ,  $TLI = 0.851$ ,  $SRMR = 0.057$ ).

**Social support questionnaire.** The social support questionnaire was developed by Xiao [61]. There were 10 items in total, which were divided into three dimensions: subjective support, objective support and utilization of support. In the questionnaire, item 1–4 and item 8–10 was scored between 1~4. Item 5 had four options, each of which was scored from 1 (none support) to 4 (full support). Items 6 and 7 were designed to investigate the sources of support received, scoring a point for each item selected. The total score was calculated as the social support score. The higher the score, the better the situation of social support. The questionnaire had good reliability (Cronbach's  $\alpha=0.814$ ). The structural validity of the scale in this study was good ( $RMSEA = 0.060$ ,  $CFI = 0.939$ ,  $TLI = 0.906$ ,  $SRMR = 0.055$ ).

**Self-identity scale.** The self-identity scale was developed by Oakes and Prager based on Erickson's theory [62]. The scale consisted of 19 items, scoring from 1 (not applicable at all) to 4 (very applicable). After reversing the score of the reverse questions, calculate the total score of the questionnaire. The higher the score was, the better the self-identity. The Cronbach's  $\alpha$  coefficient of this scale was 0.833. The structural validity of the scale in this study was good ( $RMSEA = 0.075$ ,  $CFI = 0.845$ ,  $TLI = 0.825$ ,  $SRMR = 0.065$ ).

**Depression anxiety stress scales (DASS-21).** Mental health was measured by the simplified version of self-assessment lists of depression-anxiety-pressure (Depression Anxiety Stress Scales, DASS). DASS first was put forward by Lovibond et al. [63]. This research adopted the DASS-21 scale assessment survey object 1 week prior to the survey of psychological state, each subject scoring between 0~3 points: "0" means "never", "1" means "sometimes", "2" means "often", and "3" means "always". Multiplied the scores was by 2 as the final score. The Cronbach's  $\alpha$  coefficient of the scales were 0.939, showing good reliability. The structural validity of the scale in this study was good ( $RMSEA = 0.083$ ,  $CFI = 0.869$ ,  $TLI = 0.884$ ,  $SRMR = 0.046$ ).

### 3.3 Data Analysis

Common method bias result showed that the cumulative interpretation of the first factor was 19.49%, less than 50%, suggesting that there was no common method bias [64,65]. SPSS 24.0 was used to fulfill descriptive statistics, ANOVA and Pearson correlations. Mplus 7.0 was conducted for mediation path analysis.

## 4 Results

### 4.1 Demographic Statistics

A total of 900 questionnaires were distributed to individuals who studied in universities without invalid questionnaires. Participants' mean age was 21.95 (SD = 3.36). There were 588 (65.33%) undergraduate, 268 (29.78%) master students and 44 (4.89%) doctoral students. Among them 34 (3.78%) were in Grade one, 136 (15.11%) in Grade Two, 224 (24.89%) in Grade Three and 506 (56.22%) in Grade Four; 290 (32.22%) were men and 610 (66.67%) were women. Demographic information of the participants was presented in Table 1.

**Table 1:** Demographic statistics

Variable	n	Percent (%)
<b>Student type</b>		
Undergraduate	588	65.33
Master	268	29.78
Doctoral	44	4.89
<b>Grade</b>		
One	34	3.78

(Continued)

<b>Table 1 (continued)</b>		
Variable	n	Percent (%)
Two	136	15.11
Three	224	24.89
Four	506	56.22
<b>Gender</b>		
Men	290	32.22
Women	600	66.67

#### 4.2 Descriptive Statistics

Testing for multivariate normality is frequently recommended when performing ANOVA and structural equation model (SEM). The skewness and kurtosis values within the  $\pm 3$  range indicated that the variable was distributed normally [66]. The descriptive statistical results were shown in Table 2, indicating that all variables were normal distribution.

**Table 2:** Descriptive statistical results

Variable	Minimum	Maximum	Mean	SD	Skewness	Kurtosis
Academic stressors	49.00	245.00	137.30	34.32	-0.19	-0.06
Work stressor	7.00	35.00	22.15	6.06	-0.16	-0.33
Goal stressor	7.00	35.00	19.90	5.71	-0.13	-0.24
Task stressor	9.00	45.00	24.77	6.59	-0.09	0.10
Competitive stressor	7.00	35.00	20.55	5.87	-0.05	-0.29
Obstacle stressor	5.00	25.00	12.99	4.45	0.07	-0.55
Parental stressor	6.00	30.00	16.20	5.44	0.09	-0.42
Others stressor	3.00	15.00	7.72	2.38	0.10	0.05
Environmental stressor	4.00	20.00	9.67	3.12	0.09	-0.26
Social support	22.00	58.00	39.06	6.30	-0.03	-0.27
Self-identity	30.00	72.00	53.61	6.89	-0.23	0.13
Mental health	42.00	168.00	64.08	20.28	1.33	2.06

ANOVA results were shown in Table 3. Results showed that the mental health differed significantly across graduating or not, ( $F(1, 1) = 6.87, p < 0.01, \eta_p^2 = 0.01$ ). The graduating students and non-graduating students had no significant difference on academic stressors ( $F(1, 1) = 2.08, p > 0.05$ ), social support ( $F(1, 1) = 3.39, p > 0.05$ ) and self-identity ( $F(1, 1) = 1.97, p > 0.05$ ). Then conduct a further ANOVA to certify which subdimension of academic stressors made mental health different between the graduating and non-graduating students. It could be found that among the 8 dimensions of academic stressors, there was significant difference of work stressor ( $F(1, 1) = 4.82, p < 0.05, \eta_p^2 = 0.01$ ), but not the others ( $p > 0.05$ ).

**Table 3:** ANOVA results between the graduating and non-graduating students

Variables	Graduating or not		F
	Non-graduating (n = 313)	Graduating (n = 587)	
Academic stressors	139.56 ± 35.88	136.10 ± 33.42	2.08
Work stressor	22.75 ± 6.22	21.82 ± 5.95	4.82*
Goal stressor	20.14 ± 6.09	19.77 ± 5.50	0.88
Task stressor	25.47 ± 6.73	24.40 ± 6.50	5.35
Competitive stressor	21.06 ± 6.09	20.27 ± 5.74	3.66
Obstacle stressor	12.83 ± 4.50	13.08 ± 4.21	0.63
Parental stressor	16.46 ± 4.45	16.06 ± 4.42	1.09
Others stressor	7.60 ± 2.55	7.44 ± 2.28	1.17
Environmental stressor	9.78 ± 3.20	9.61 ± 3.07	0.57
Social support	38.53 ± 6.37	39.34 ± 6.24	3.39
Self-identity	53.17 ± 6.97	53.85 ± 6.84	1.97
Mental health	66.50 ± 21.02	62.79 ± 19.78	6.87**

Note: \* $p < 0.05$ , \*\* $p < 0.01$ .

#### 4.3 Correlation Analysis

Correlation analysis for academic stressors, social support, self-identity and mental health were conducted in SPSS. Results in Table 4 showed that mental health was positively correlated with academic stressors ( $r = 0.40$ ). And academic stressors was negatively correlated with social support ( $r = -0.20$ ), social well-being ( $r = -0.24$ ) and self-identity ( $r = -0.44$ ). In addition, social support and self-identity were positively correlated with each other ( $r = 0.46$ ). Considering the different stressors, all had significant correlation with social support ( $r = -0.44 \sim 0.38$ ,  $p < 0.001$ ), self-identity and mental health except the others stressor.

**Table 4:** Correlation analysis results

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1 Academic stressors	1											
2 Work stressor	0.84**	1										
3 Goal stressor	0.86***	0.72***	1									
4 Task stressor	0.91***	0.71***	0.73***	1								
5 Competitive stressor	0.91***	0.77***	0.75***	0.83***	1							
6 Obstacle stressor	0.80***	0.55***	0.61***	0.68***	0.68***	1						
7 Parental stressor	0.81***	0.61***	0.62***	0.70***	0.67***	0.65***	1					
8 Others stressor	0.76***	0.53***	0.69***	0.66***	0.60***	0.68***	0.59***	1				
9 Environmental stressor	0.77***	0.55***	0.62***	0.72***	0.64***	0.68***	0.58***	0.63***	1			
10 Social support	-0.20***	-0.23***	-0.17***	-0.16***	-0.20***	-0.13***	-0.15***	-0.04	-0.14***	1		

(Continued)

**Table 4 (continued)**

Variables	1	2	3	4	5	6	7	8	9	10	11	12
11 Self-identity	-0.44***	-0.44***	-0.36***	-0.39***	-0.44***	-0.34***	-0.33***	-0.24***	-0.31***	0.46***	1	
12 Mental health	0.40***	0.38***	0.33***	0.37***	0.37***	0.29***	0.29***	0.25***	0.31***	-0.38***	-0.69***	1
<i>M</i>	137.30	22.14	19.90	24.77	20.55	12.99	16.20	7.72	9.67	39.06	53.61	64.08
<i>SD</i>	34.32	6.06	5.71	6.59	5.87	4.45	5.44	2.37	3.11	6.30	6.89	20.28

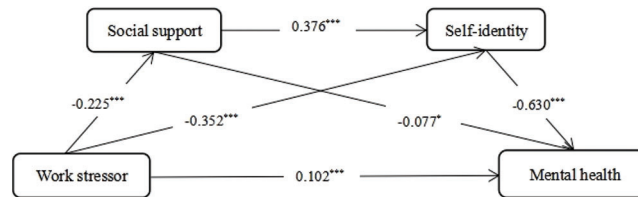
Note: \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

**4.4 Mediation Model Results**

**4.4.1 Mediation Model Results of College Students**

Introduce mental health as the dependent variable, academic stressors as the independent variable, social support and self-identity as mediation variables into the structural equation model (SEM). Model fit results: *RMSEA* (Root Mean Square Error of Approximation) was 0.05; *CFI* (Comparative Fitting Index) was 0.99; *TLI* (Tucker-Lewis Index) was 0.99; *SRMR* = 0.01. According to the results, it could be known that the academic stressors of college students did impact mental health, and social support and self-identity mediated the relationship.

In order to figure out the main factor that contributed to the variation of mental health, the academic stressors was divided by its eight dimensions. According to the Table 3, it was found that the difference of mental health and work stressor had reached the significant level ( $p < 0.05$ ), and the other variables had no significant difference. So conduct a SEM in which work stressor as the independent variable. Model fit results: *RMSEA* = 0.04, *CFI* = 0.99, *TLI* = 0.99, *SRMR* = 0.01. The path coefficients were shown in Fig. 2. It was believed that different work stressor caused different mental health among college students.



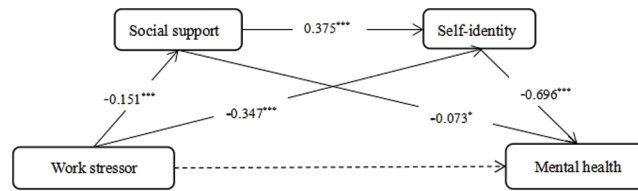
**Figure 2:** The mediation model of college students’ work stressor on mental health

Note: \* $p < 0.05$ , \*\*\* $p < 0.001$ .

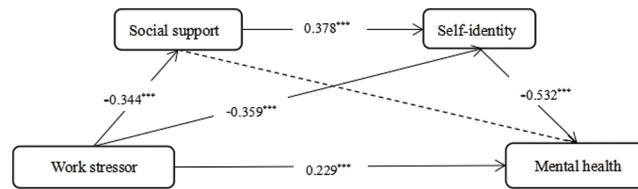
**4.4.2 Mediation Model Results of the Graduating and Non-Graduating Students**

Results shown in Fig. 2 suggested that the difference on mental health was caused by the variation of work stressor. Further mediation model analysis would be conducted to certificate it would be right or not in the graduating and non-graduating groups. The SEM results as shown in Figs. 3 and 4. Model fit results of the graduating students: *RMSEA* = 0.02, *CFI* = 0.99, *TLI* = 0.99, *SRMR* = 0.01. Model fit results of the non-graduating students: *RMSEA* = 0.06, *CFI* = 0.99, *TLI* = 0.99, *SRMR* = 0.01. The path coefficients of the models of graduating students and non-graduating students were shown in Table 5. And the effect size for each path and their 95% confidence intervals were shown in Table 6.

It could be seen from Figs. 3 and 4 that the prediction of work stressor on mental health was different between the graduating and non-graduating. There were two different points. One was that the direct effect of work stressor on mental health of the graduating was not significant. The other was that the indirect path from social support to mental health of the non-graduating was not significant.



**Figure 3:** The mediation model of graduating students’ work stressor on mental health  
 Note: \* $p < 0.05$ , \*\*\* $p < 0.001$ .



**Figure 4:** The mediation model of non-graduating students’ work stressor on mental health  
 Note: \*\*\* $p < 0.001$ .

**Table 5:** The mediating model of the graduating and non-graduating

Variables		Social support			Self-identity			Mental health		
		$\beta$	SE	$t$	$\beta$	SE	$t$	$\beta$	SE	$t$
graduates	Work stressor	-0.15	0.04	-3.59***	-0.35	0.04	-9.04***	0.03	0.02	0.96
	Social support				0.38	0.04	10.15***	-0.07	0.02	-2.23*
	Self-identity							-0.69	0.02	-15.56***
	$R^2$		0.02			0.30			0.54	
Non-graduates	Work stressor	-0.34	0.05	-6.87***	-0.36	0.06	-6.47***	0.23	0.02	5.01***
	Social support				0.38	0.05	7.72***	-0.06	0.03	-0.98
	Self-identity							-0.53	0.03	-8.80***
	$R^2$		0.12			0.37			0.50	

Note: \* $p < 0.05$ , \*\*\* $p < 0.001$ .

**Table 6:** The mediating effect of social support and self-identity on work stressor and mental health

Group	Item	Effect	Boot SE	Boot LLCI	Boot ULCI	Result
	Work stressor→self-identity→mental health	0.24	0.03	0.19	0.29	Significant
	Work stressor→social support→mental health	0.01	0.01	0.01	0.02	Significant
	Work stressor→social support→self-identity→mental health	0.04	0.01	0.02	0.06	Significant
	Total mediating effect	0.29	0.03	0.23	0.34	Significant
	Total effect	0.32	0.04	0.234	0.40	Significant

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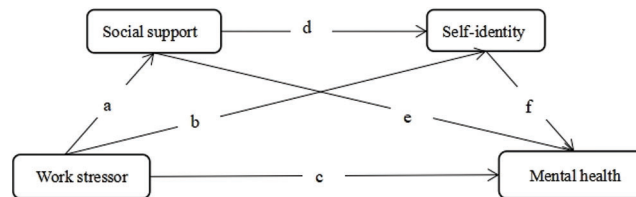


Group	Item	Effect	Boot SE	Boot LLCI	Boot ULCI	Result
Non-graduating students	Direct effect	0.23	0.04	0.15	0.31	Significant
	Work stressor→self-identity→mental health	0.19	0.04	0.12	0.26	Significant
	Work stressor→social support→mental health	0.02	0.02	-0.02	0.06	Insignificant
	Work stressor→social support→self-identity→mental health	0.07	0.02	0.04	0.10	Significant
	Total mediating effect	0.28	0.05	0.19	0.37	Significant
	Total effect	0.51	0.05	0.41	0.61	Significant

In the mediation effect results, as shown in Table 6, it could be found that the direct effect that work stressor on mental health was not significant in the graduating group for the confidence interval including 0. The impact social support on mental health was not significant in the non-graduating group. The total effect and the indirect effect both were significant. Moreover, the percentage of indirect effect on total effect was 90.00% in the graduating group, which was higher than the non-graduating group (55.21%), suggesting that the graduating' work stressor impacted mental health more through social support and self-identity.

#### 4.4.3 Multi-Group Mediated Comparison of Graduating and Non-Graduating Students

In order to further explore the difference of work stressor on mental health between the graduating and the non-graduating, multi-group comparison was conducted. The path coefficient and corresponding results of the multi-group mediation model analysis were shown in Fig. 5 and Table 7.



**Figure 5:** The path coefficients of the mediation model

**Table 7:** The multi-group mediation results of the graduating and non-graduating

Mediation variables	Path	The graduating	The non-graduating	Wald value	<i>p</i>
Social support	a	-0.150	-0.334	7.083	0.0078
Self-identity	b	-0.345	-0.355	0.000	0.9939
	c	0.032	0.231	11.146	0.0008
	d	0.376	0.376	0.000	1.0000
	e	-0.073	-0.062	0.018	0.8925
	f	-0.686	-0.532	3.767	0.0523
	a*e	0.011	0.021	0.299	0.5844
	b*f	0.237	0.189	1.116	0.2909
	a*d*f	0.039	0.067	2.330	0.1269

The results of the Wald chi-square test (see Table 7) showed that the difference of direct effect between two groups was statistically significant ( $p < 0.001$ ). And the difference of effect that social support on mental health between the two groups was also statistically significant ( $p < 0.001$ ). It mean that work stressor of the non-graduating could not impact on mental health through social support, but it could establish in the graduating group.

## 5 Discussion

### 5.1 The Direct Impact That Work Stressor on Mental Health

Research on the anxiety of non-graduating students showed that they had more anxiety during the COVID-19. And the younger students suffered more problems than the older students [67]. The current study showed that the mental health of the non-graduating ( $M = 66.50$ ,  $SD = 21.02$ ) was also significantly higher than the graduating ( $M = 62.79$ ,  $SD = 19.78$ ). Generally, the non-graduating students had more mental problems during the outbreak of COVID-19. And work stressor of the non-graduating ( $M = 22.75$ ,  $SD = 6.22$ ) was significantly higher than the graduating ( $M = 21.82$ ,  $SD = 5.95$ ). The current study showed that mental health was closed with stressors, and work stressor could predict mental health, having similar results as previous studies [21–23].

The direct path that work stressor to mental health differed between the graduating and non-graduating group. It reflected that the graduating students' work stressor could not directly predict their mental health, but established for the non-graduating students. It can be inferred that the non-graduating students were uncertain and cared too much about the future, resulting in high anxiety and pressure causing mental health problems. On the contrary, the graduating had clear goals, and had lower level of work stressor and mental health. Some of them already had internships before the outbreak of COVID-19, or had found future employment [68]. They would have lower levels of work stressor and psychological problems. That was why the graduating students' work stressor could not predict their mental health directly, else through social support and self-identity.

### 5.2 The Mediating Role of Social Support

The college students were at the transition from college to society, especially the graduating, so they might be faced with many challenges related to work [69]. Stressors and distress were synonymous with the graduate experience [70]. Social support from various sources, such as faculty and peers, was necessary for coping with the demands of graduate school [71] and in lowering physical and psychological symptoms [72]. It was an important element of successful entry to job market for the graduating students [73]. Compared to the non-graduating, the graduating encountered with job decisions or work challenge would depend on more on it.

It was reasonable to claim that the graduating made significantly greater use of social support than the non-graduating. For the graduating, social support was the important mediating factor in the perception of anxiety as external and internal coping resources [74,75]. Support systems could provide individuals with opportunities for more concrete career decisions and exploration of occupational identities [76]. Positive support had been found to buffer the stressors associated with the graduate year [77–81]. So social support was critical to mitigate the stress of the graduate year and build the graduating students' confidence to cope with work stressor [82].

### 5.3 The Mediating Role of Self-Identity

Self-identity protected against health risk among college-aged populations [83], with close link to psychological states. When an identity was successfully made less central to the self, ongoing problems in the identity domain or even the loss of the identity should have less psychological impact [84]. If an individual felt failure at work or encountered challenges, they de-emphasized the importance and value of the hard work, so as to protect his self-evaluation. The current study showed that work stressors did

impact mental health, self-identity mediating the relationship. Self-identity was the crucial factor for improving self-esteem and gaining new identities [85–88]. The mediation effect of self-identity was higher in the graduating group than the non-graduating group. During the COVID-19, around by stressful work environment, high self-evaluation and self-identity could alter individuals' mental situation. Especially, the graduating students faced with competing in job market, social support made them good perception of their abilities, reducing the risk of mental issues.

#### ***5.4 The Psychological Mechanism between Work Stressor and Mental Health***

The current results showed that the work stressor of college students predicted mental health, social support and self-identity playing as mediators in the relationship, having some same conclusion as the previous [89,90]. Relative data showed about half of graduating students expressed significant emotional or stress-related issues, including depression and anxiety [91,92]. Also, the non-graduating students had high level of negative emotions during the COVID-19. So there was an increasing need to help not only the graduating students but also the non-graduating students those who suffered significant mental health concerns [67]. Researchers had identified many personal and work-related stressors and their negative impact the college students faced during the graduate year [80,93]. The current results provided further evidence that work stressor impacted mental health, consistent with previous study [90].

By comparing the graduating and non-graduating students, the current study found that social support and self-identity were important components for the graduating students to reduce mental problems aroused by work stressor. Social support could be beneficial in work determining and buffering stressor [94]. It was an important protective factor to maintain mental health and lifts psychological barriers [95]. In addition, self-identity had a strong negative correlation with stressor, and social support was a significant mediator in the relationship Haslam et al. [89]. Given the high infectivity and damaging effect of COVID-19, social support and self-identity were necessary to fight against work stressors which brought out psychological issues.

#### ***5.5 Limitation and Implication***

The study focused the relationship among work stressor, social support, self-identity and mental health. And in order to investigate the difference of the graduating and non-graduating students, the work stressor subdimension of academic stressors was studied. The ignorance of subdimensions of social support and mental health was the limitation of the study. Social support as a protective factor had different aspects, so it was important to analyze the role of divided social support in future.

Moreover, the study concentrated on the effect work stressor on mental health between the graduating and non-graduating students. But the employment was not taken into consideration. And there might make different for those graduating students who got work offer and who did not. It would be better to conduct in-depth study of the difference of the effect that work stressor on mental health among the groups, such as the graduating students received work offer, those who did not receive the offer and non-graduating students.

### **6 Conclusion**

In summary, college students' experiences of work stressor had negative consequences for their mental health, with social support and self-identity having mediating effects. In addition, the direct and indirect effect that work stressor on mental health were different between the graduating and non-graduating students. Specially, the direct effect work stressor on mental health in the graduating group was significant, and the non-graduating students' work stressor could not predict mental health through social support.

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