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The Association Between Being an Only Child and Depressive Symptoms Among Chinese College Students

(Hubungan di Antara Status Anak Tunggal dan Simptom Kemurungan dalam Kalangan Pelajar Kolej China)

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Abstract

This study investigated the current status of depressive symptoms among Chinese college students and analyzed the association between being an only child and depressive symptoms. A cross-sectional survey was conducted with 771 college students from five universities in Jilin Province. Depressive symptoms were assessed using the Center for Epidemiological Studies Depression Scale (CES-D). The results indicated that 28.4% of college students exhibited depressive symptoms. Only children reported significantly higher depressive symptom scores compared to non-only children, and female students had higher scores than their male counterparts. These findings highlight the importance of targeted mental health interventions for only children.

Keywords: college students; only child; depressive symptoms; China, mental health

Abstrak

Penyelidikan ini mengkaji status gejala kemurungan semasa dalam kalangan pelajar kolej China dan menganalisis hubungan antara status anak tunggal dan gejala kemurungan. Tinjauan keratan rentas ini telah merekrut sebanyak 771 pelajar kolej dari lima universiti di Wilayah Jilin. Gejala kemurungan dinilai menggunakan Skala Kemurungan Pusat Kajian Epidemiologi (CES-D). Keputusan menunjukkan bahawa 28.4% pelajar kolej melaporkan gejala kemurungan. Pelajar yang berstatus anak tunggal merekodkan skor gejala kemurungan yang lebih tinggi berbanding pelajar yang bukan berstatus anak tunggal, dan pelajar perempuan mempunyai skor yang lebih tinggi daripada pelajar lelaki. Penemuan ini menyerlahkan kepentingan intervensi kesihatan mental yang disasarkan untuk mereka yang berstatus anak tunggal.

Kata Kunci: pelajar kolej; anak tunggal; gejala kemurungan; China; kesihatan mental

INTRODUCTION

China is experiencing a significant demographic transition, with an aging population posing considerable challenges. According to the seventh national census, by the end of 2020, individuals aged 65 and above accounted for 13.5% of the total population. To address the declining labor force, the Chinese government introduced the Three-Child Policy. Alongside this demographic shift, as part of the broader demographic transition, the number of only children has steadily increased. In 2021, it reached 208 million and is projected to rise to 303 million by 2050 (National Bureau of Statistics 2021).

Multiple studies have shown that only children tend to be self-centered, less cooperative, and less likely to get along with their peers (Cameron et al. 2013). This demographic trend has also given rise to a family provisioning pattern referred to as the ‘421 phenomenon’ (4 = four older adults, 2 = two middle-aged adults, and 1 = one child). Studies suggest that, compared to non-only children, only children are more likely to report a pessimistic outlook and more severe psychological issues (Zhao et al. 2024).

Depression is a mood disorder characterized by persistent symptoms such as reduced speech and diminished ability to engage in purposeful activities, which are often accompanied by feelings of hopelessness and low self-worth (Pizzagalli 2014). Depression is widely recognized in psychology as a persistent and pervasive negative emotional state that affects mood, behavior, and cognitive function (Höhne et al. 2014). However, experiencing negative emotions does not necessarily mean one is suffering from clinical depression (Wang et al. 2022). Clinical depression can only be diagnosed if the negative emotional state persists over time and significantly impairs an individual’s social functioning and overall quality of life (Radloff 1977; Sun et al. 2024). The

World Health Organization predicts that, by 2030, depression will become the leading cause of global mental health burden (Ren et al. 2017). In China, a survey found that more than one-third of college students experienced depressive symptoms in the week prior to the study, with 24.21% confirming the presence of depressive symptoms (Xiang 2024).

College students are in a critical stage of personal development. The pressures of academic demands, living conditions, and interpersonal relationships can lead to maladjustment and low self-esteem, which may negatively impact their mental health (Höhne et al. 2014). Depressive mood is a common manifestation of these stressors. Research studies abroad have found that only 16.5% of American college students do not exhibit depressive symptoms (Garlow et al. 2008), while 59% of Irish college freshmen report depressive symptoms (Horgan 2018). In China, it was found that more than one-third of college students may have had depressive symptoms in the week prior to the survey, while 24.21% definitely had depressive symptoms (Xiang 2024). Although several studies (Zhong 2023) have investigated the prevalence of depressive symptoms among college students, there is limited evidence on the relationship between depressive symptoms and being an only child. There is limited evidence on the co-occurrence of other conditions with depressive symptoms among college students, as well as on the relationship between depressive symptoms and being an only child. Therefore, the aims of our study were as follows: (1) to estimate gender-specific differences in depressive symptoms among college students; (2) to compare depressive symptoms between male and female college students who are only children and those who are not; (3) to explore the relationship between being an only child and depressive symptoms among college students, adjusting for potential confounders.

MATERIALS AND METHODS

2.1 Design and procedures

This cross-sectional study was conducted at five universities in Jilin Province, China: Jilin Normal University, Changchun Engineering College, Beihua University, Jilin University of Finance and Economics, and Baicheng Normal College. To recruit participants, we employed a convenience sampling method, selecting students who were available and willing to participate during the survey period. Participants were recruited using a convenience sampling method, selecting students who were available and willing to participate during the survey period.

While convenience sampling has limitations in generalizability, efforts were made to include students from different academic years (freshman to senior) and a variety of disciplines to ensure broad representation. All participants provided informed consent, and the study adhered to ethical guidelines to protect their rights and privacy.

2.2 Participants

2.2.1 Sample Size

The sample size was determined based on an anticipated 30% prevalence of depressive symptoms among college students, which is consistent with previous studies (Li et al. 2014) and the desired statistical power. We invited 912 students from the selected classes, of which 823 (90.24%) agreed to participate. Prior to administering the survey, informed consent was obtained from all subjects. Trained investigators explained the standard requirements for completing the questionnaire. Once completed, the questionnaires were collected, double-checked for completeness, and any incomplete responses were excluded. This resulted in 771 valid questionnaires, yielding a response rate of 93.68%.

2.2.2 Inclusion and Exclusion Criteria: Participants had to be aged 18 to 24 years, enrolled in any major at the selected universities, and willing to voluntarily participate and provide informed consent. Students were excluded if they were unavailable during the survey period or did not provide informed consent.

2.3 Instruments

2.3.1 The Center for Epidemiological Studies Depression Scale (CES-D)

Depressive symptoms were assessed using the Center for Epidemiological Studies Depression Scale (CES-D; Radloff 1997; Siddaway 2017), which includes 20 items rated on a 4-point scale (0 = rarely or none of the time, 3 = most or all of the time). A total score of 16 or higher indicates clinically relevant depressive symptoms. The scale demonstrated good internal consistency in the present study ($\alpha = 0.913$).

2.3.2 General socio-demographic characteristics

A self-designed questionnaire was used to collect demographic data, including gender, grade level (freshman to senior), only-child status, family income, and parental education level. The questionnaire collected data on whether the participant was an only child (1 = yes, 2 = no), grade level (1 = freshman, 2 = sophomore, 3 = junior, 4 = senior), gender (1 = male, 2 = female), and the highest level of education completed by each parent (1 = University and above, 2 = High school, 3 = Middle school and below, 4 = Elementary school and below).

2.4 Procedures

Participants were recruited using convenience sampling through an online survey. Recruitment involved a multi-channel approach. Teachers strategically placed posters across the university campus and shared information about the study through WeChat and QQ groups to increase visibility and encourage participation. Prospective participants could easily access the questionnaire by scanning QR codes available on the posters or in the designated social media groups. Prior to participation, students signed an electronic informed consent form, and only those who provided consent proceeded with the questionnaire.

All participants provided electronic informed consent before completing the survey. The study protocol was approved by the Institutional Review Board of the National University of Malaysia (Approval Number: JEP-2024-548)

2.5 Statistical Analysis

Data were entered and analyzed using IBM SPSS Statistics for Windows, version 22.0 (IBM Corp, Armonk, NY, USA). Continuous variables were summarized as means and standard deviations (SD), while categorical variables were presented as frequencies and percentages (n = X, %). Independent samples t-tests were used to compare mean depressive symptom scores between only children and non-only children, as well as between male and female students. One-way analysis of variance (ANOVA) was used to assess differences in depressive symptom scores across different educational levels and academic grades.

We used independent samples t-test to compare the differences in depressive symptoms between only children and non-only children. Since we were interested in the difference in means between two groups and the data were normally distributed, a t-test was chosen instead of analysis of variance. Additionally, chi-square tests were used to assess the association of gender, parental education level, and depressive symptoms.

Chi-square tests were employed to analyze the association between categorical variables, such as the prevalence of depressive symptoms among different demographic groups (e.g., gender and parental education level). Additionally, statistical methods such as independent samples t-tests and one-way ANOVA were used to explore the relationship between only-child status and depressive symptoms, with relevant confounding factors considered. All statistical analyses were two-tailed, and a p-value of < 0.05 was considered statistically significant.

RESULTS

3.1. Demographic Characteristics

A total of 771 college students from five universities were surveyed in this study. 410 (53.2%) were only children and 361 (46.8%) were not only children, while 454 (58.9%) were male students and 317 (41.1%) were female students. The grade composition was as follows: 430 (55.8%) were freshmen, 218 (28.3%) were sophomores, 98 (12.7%) were juniors, and 25 (3.2%) were seniors. Four hundred and forty-six (57.8%) had annual incomes of less than $60,000, 283 (36.9%) earned between $60,000 and $480,000, and 41 (5.3%) earned more than $480,000. Regarding parents' education level (based on the highest level of education attained by either parent), 206 (26.7%) had parents with education at the elementary school level or below, 270 (35.1%) had parents with junior high or middle school education, 173 (22.4%) had parents with high school education, and 122 (15.8%) had parents with university education or higher. (Table 1).

Table 1. Demographic Information of Participants

Category	**Number Of Students**	**Percentage (%)**
Total Students	771	100.0
Only Children	410	53.2
Not Only Children	361	46.8
Gender		
Male	454	58.9
Female	317	41.1
Grade		
Freshmen	430	55.8
Sophomores	218	28.3
Juniors	98	12.7
Seniors	25	3.2
Parent's Education Level		
Elementary School and Below	206	26.7
Junior High School and Middle School	270	35.1
High School	173	22.4
College and above	122	15.8

3.2. Distribution of Depressive Symptoms

The CES-D scores of participants ranged from 0 to 60, with an average score of 15.95 (SD = 11.93), which is consistent with previous studies in this population. According to the CES-D criteria, 305 participants (39.6%) had no depressive symptoms (score $\leq$ 15), 247 participants (32.0%) exhibited

possible depressive symptoms (score 16–19), and 219 participants (28.4%) had definite depressive symptoms (score ≥ 20).

Independent samples t-tests were conducted to compare depressive symptoms between only children and non-only children, as well as male and female students, to assess group differences. Results indicated a significant difference in depressive symptom scores between only children and non-only children (t = -2.091, df = 769, p<0.001), with only children showing higher depressive symptoms (M = 16.49, SD = 12.67) compared to non-only children (M = 15.60, SD = 11.40). A significant gender difference was found (t = -0.861, df = 769, p=0.005), with female students (M = 16.40, SD = 10.48) reporting higher depressive symptoms than male students (M = 15.56, SD = 12.80). This suggests that female students may be more affected by depressive symptoms. Students with parents who had lower educational attainment (i.e., elementary school or below) exhibited more pronounced depressive symptoms (M = 16.55, SD = 13.45) compared to those with parents who had higher educational levels (M = 16.10, SD = 12.29). Specifically, students with parents who had university-level education reported the least depressive symptoms (M = 16.10, SD = 12.29), which was significantly lower than those with parents having lower educational attainment.

Furthermore, a significant difference in depressive symptoms was observed across academic grades (F = 3.378, df_1=3 df_2=767, p = 0.010), with third-year students reporting the highest levels of depressive symptoms (M = 17.12, SD = 10.40), followed by seniors (M = 16.00, SD = 13.52), sophomores (M = 16.24, SD = 11.97), and freshmen (M = 15.54, SD = 12.15) (Table 2).

Table 2. Depressive Symptoms by Demographic Variables

	M	*SD*	*t*	*p*
Only children or not			-2.091	p < 0.001
Yes	16.49	12.67		
Not	15.60	11.40		
Level of education			7.517	p < 0.001
1	16.10	12.29		
2	15.31	11.19		
3	16.36	11.54		
4	16.55	13.45		
Sex			-0.861	0.005
Male	15.56	12.80		
Female	16.40	10.48		
Grade			3.378	0.010
Freshman	15.54	12.15		
Sophomore	16.24	11.97		
Junior	17.12	10.40		
Senior	16.00	13.52		

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1-University and above,2- High school, 3- Middle school and Secondary school, 4- Elementary school and below

3.3. Gender and Only-Child Status Differences

Among the 410 only children, 146 (48.7%) exhibited depressive symptoms. Of these, 83 (46.0%) males only children and 63 (48.8%) females only children showed symptoms of depression. In comparison, 361 non-only children exhibited a lower overall prevalence of depressive symptoms, with 119 (32.9%) male and 84 (23.3%) female non-only children reporting depressive symptoms. Among male non-only children, 119 (45.0%) had depressive symptoms, while 84 (44.6%) female non-only children showed depressive symptoms.

Chi-square analysis revealed a statistically significant difference in depressive symptoms between male and female students χ^2 (df=1,N=771,)= 2.964, p = 0.050. No significant gender difference was found among only children χ^2(df=1,N=454,= 3.041, p = 0.343) or among non-only children χ^2(df=1, N=317)= 1.976, p = 0.574 (Table 3).

Table 3. Gender and Only-Child Status Differences in Depressive Symptoms

Variables	Total				**Only Children**				**Non-Only Children**			
	Male	**Female**	χ^2	***p***	**Male**	**Female**	χ^2	***p***	**Male**	**Female**	χ^2	***p***
	N (%)	**N (%)**			**N (%)**	**N (%)**			**N (%)**	**N (%)**		
Depressive symptom	129	90	2.964	0.050	83	61	3.041	0.343	46	29	1.976	0.574
	(28.4)	(25.2)			(30.3)	(32.4)			(25.6)	(22.5)		

3.4. Parental Education and Depressive Symptoms

This study examined the relationship between depressive symptoms and parental education level, focusing on differences between only children and non-only children. Among the 410 only children, 169 (36.6%) had parents with an education level of elementary school or below, and 63 (37.2%) of these exhibited depressive symptoms. For the 201 (43.5%) only children whose parents completed junior high or middle school, 58 (28.8%) showed depressive symptoms. Among the 71 (15.4%) only children whose parents completed high school, 20 (28.2%) exhibited depressive symptoms. In contrast, among the 21 (4.5%) only children whose parents had university-level education or above, only 3 (14.2%) showed depressive symptoms, indicating a lower prevalence of depressive symptoms with higher parental education.

For the 361 non-only children, 37 (12.0%) had parents with an education level of elementary school or below, and 15 (40.5%) of these exhibited depressive symptoms. Among the 69 (22.3%) non-only children whose parents completed junior high or middle school, 33 (21.6%) reported depressive symptoms. Among the 102 (33.0%) non-only children whose parents had a high school education, 22 (21.7%) exhibited depressive symptoms. Finally, among the 101 (32.7%) non-only children whose parents had university-level education or above, 15 (14.9%) showed depressive symptoms.

The chi-square test revealed a significant association between parental education level and depressive symptoms among only children, χ^2 (df = 3, N = 410) = 31.278, $p < 0.001$. However, no significant association was found for non-only children, χ^2 (df = 3, N = 361) = 15.877, $p = 0.071$. These results suggest that parental education level has a stronger impact on depressive symptoms in only children compared to non-only children (Table 4).

Table 4. Depressive Symptoms and Parental Education Level

Variables	**Depressive symptom**			
		N (%)	**χ^2**	**p**
Only children or not	Level of education		31.278	$p < 0.001$
Yes	University and above	63(37.2)	19.911	0.001
	High school	58(28.8)		
	Middle school and Secondary school	20(4.3)		
	Elementary school and below	3(14.2)		
Not	University and above	15(40.5)	15.877	0.071
	High school	33(21.6)		
	Middle school and Secondary school	22(21.7)		
	Elementary school and below	15(14.9)		

DISCUSSION

This study yielded several key findings: (1) 28.4% of university students exhibited depressive symptoms, with a significant gender difference, as female students showed higher depressive symptoms than male students. (2) The prevalence of depressive symptoms among only children was significantly higher compared to non-only children. However, no significant gender difference was observed within the only-child group. (3) Parental education level was strongly associated with depressive symptoms, with lower parental education levels correlating with a higher prevalence of depressive symptoms among college students.

The university period is a crucial transitional stage in students' lives, marked by significant personal and academic development. During this time, mental health plays a pivotal role in their academic performance and overall personal growth. College students are particularly vulnerable to various stressors, including academic pressures, career decision-making, relationship challenges, and family expectations. These stressors may contribute to psychological difficulties, such as depression (Wu et al. 2020).

In this study, the prevalence of depressive symptoms (28.4%) was higher than previously reported rates, such as 19.6% (Tang et al. 2018) and 8.7% (Guo et al. 2021), although these studies may have involved different populations or methodologies. (2015). This noticeable increase highlights an emerging mental health concern, particularly given the evolving societal pressures on students, which warrants immediate attention and intervention. Our findings suggest that only children are at greater risk of experiencing depressive symptoms compared to their peers with siblings, possibly due to unique familial expectations and limited social support systems. This result aligns with the study, which highlighted the impact of family dynamics and parental expectations on

only children (Lao & Lin 2022). Previous research (Cheng et al. 2020) also indicates that only children may exhibit more rigid personality traits, which can make them less adaptable to change and more vulnerable to depression.

Several factors may explain the higher prevalence of depressive symptoms among only children, such as heightened parental expectations, lack of sibling support, and limited opportunities to develop social and conflict resolution skills. Only children may face heightened parental expectations due to their unique position in the family, where all hopes and aspirations are concentrated on them (Zhong et al. 2023). The absence of siblings may also limit their opportunities to develop social and conflict resolution skills during childhood, potentially leading to difficulties in maintaining healthy relationships in adulthood (Jia et al. 2022). These challenges, combined with academic pressures, increase their vulnerability to emotional distress.

Given these findings, universities must implement comprehensive mental health support systems, including professional counseling, peer mentorship programs, and workshops on stress management and resilience building, to cater to the specific needs of only children and other vulnerable groups. These support systems should include professional counseling services, peer mentorship programs, and workshops on stress management and resilience building. By addressing students' mental health needs proactively, universities can help them manage the pressures of academic life and transition more smoothly into adulthood, thereby improving their overall well-being and future success.

The association between depressive symptoms and academic year is particularly noteworthy, as our findings show that junior students reported the highest levels of depressive symptoms. Although students generally develop stronger coping mechanisms and emotional resilience as they progress through university (Ma et al. 2022), our findings show that junior students reported significantly higher levels of depressive symptoms compared to other year groups. This could be due to increased academic pressure, uncertainty about future career paths, and the challenging transition from the initial years of university. It is crucial for universities to provide targeted mental health support to junior students, such as regular well-being assessments, counseling services, and career guidance, to closely monitor their emotional health and offer timely intervention when necessary.

Parental education level was found to be significantly associated with depressive symptoms in this study. Students whose parents had lower educational attainment were more likely to experience depressive symptoms, consistent with previous research showing that higher parental education levels serve as a protective factor against depression (Li et al. 2024). However, the impact of parental education on depressive symptoms was more pronounced in only children than in non-only children. Specifically, only children with parents who had lower educational attainment exhibited more severe depressive symptoms compared to their peers, suggesting that parental education plays a more critical role in shaping the mental health of only children. This could be due to unique family dynamics and the heightened expectations placed on only children in families with lower educational resources.

Despite its valuable contributions, this study has several limitations. First, the sample was drawn from 771 college students in five universities in Jilin Province, which may limit the generalizability of the findings. Future studies should aim to include a more diverse sample of students from different regions to enhance the external validity of the results. Second, the data were collected through self-reported questionnaires, which, despite their widespread use and established reliability, may be subject to recall bias and social desirability bias. Future studies could benefit from using mixed methods or objective measures to corroborate self-reported data. Lastly, this study employed a cross-sectional design, which precludes any causal inferences. Longitudinal studies are needed to explore the causal relationships between depressive symptoms and their associated factors among college students.

CONCLUSION AND IMPLICATIONS

The prevalence of depressive symptoms among college students in this study was notably high, particularly among female students and only children. Although no significant gender difference in depressive symptoms was found between male and female only children, the overall severity of depressive symptoms was notably higher among third-year students, likely due to the added academic and career pressures. This pattern may be attributed to the unique pressures faced by students at this academic stage, including increased academic demands, career uncertainty, and the stress associated with vocational internships, which are commonly undertaken during the third year in China (Zhang et al. 2021). Parental education level was also found to be a significant factor in the occurrence of depressive symptoms. An inverse relationship was observed, with students whose parents had higher education levels being less likely to experience depressive symptoms. However, this relationship was particularly strong among only

children. Specifically, only children with parents who had lower educational attainment exhibited more pronounced depressive symptoms compared to non-only children, highlighting the crucial role of parental education in shaping the emotional well-being of only children. This finding aligns with previous studies that emphasize the protective role of higher parental education in promoting emotional resilience and providing coping resources for children (Liu et al. 2020).

Beyond these primary factors, depression among college students is influenced by a range of other variables, including academic pressures, social relationships, and financial challenges (Chen & Zhang 2019). The unique social and family environment of only children may expose them to additional psychological stress, emphasizing the need for targeted mental health interventions tailored to their specific needs. Our findings underscore the urgent need for universities to implement comprehensive mental health strategies that address the diverse challenges faced by college students. Proactive measures, such as accessible counseling services, stress management workshops, and peer support groups, should be prioritized. Special attention should be given to third-year students, who may be at higher risk for depressive symptoms due to the combined pressures of academics and career preparation (Wang et al. 2022).

Furthermore, universities should promote a supportive environment that fosters psychological well-being. Mental health resources should be integrated into campus life, encouraging students to seek help when needed and equipping them with the tools to manage stress effectively. By adopting these strategies, institutions can enhance students' resilience and overall mental health, enabling them to navigate academic life successfully and prepare for future personal and professional challenges.

REFERENCES

Cameron, L., Erkal, N., Gangadharan, L. & Meng, X. 2013. Little emperors: Behavioral impacts of China's one-child policy. *Inter-university Consortium for Political and Social Research* 339: 953–957. https://doi.org/10.3886/ICPSR34521.v1.

Chen, X. & Zhang, Y. 2019. Academic stress and mental health among Chinese college students. *Journal of Educational Psychology* 78(4): 412–428.

Cheng, S., Jia, C. & Wang, Y. 2020. Only children were associated with anxiety and depressive symptoms among college students in China. *Environ Res Public Health* 17(11): 4035. doi:10.3390/ijerph17114035.

Fan, M. 2016. Effects of the "one-child" policy and the number of children in families on the mental health of children in China. *Rev. Cercet. Interv* 52: 105–129.

Garlow, S.J., Rosenberg, J., Moore, J.D., Haas, A., Koestner, B., Hendin, H. & Nemeroff, C.B. 2008. Depression, desperation, and suicidal ideation in college students: Results from the American Foundation for Suicide Prevention College Screening Project at Emory University. *Depression and Anxiety* 25(6): 482–488. http://dx.doi.org/10.1002/da.20321.

Guo, L., Fan, H., Xu, Z., Li, J., Chen, T., Zhang, Z. and Yang, K., 2021. Prevalence and changes in depressive symptoms among postgraduate students: A systematic review and meta-analysis from 1980 to 2020. *Stress and Health*, *37*(5), pp.835-847.

Höhne, N., Poidinger, M., Merz, F., Pfister, H., Brückl, T., Zimmermann, P. & Ising, M. 2014. Increased HPA axis response to psychosocial stress in remitted depression: The influence of coping style. *Biological Psychology* 103: 267–275.

Horgan, A., Kelly, P., Goodwin, J. & Behan, L. 2018. Depressive symptoms and suicidal ideation among Irish undergraduate college students. *Issues in Mental Health Nursing* 4: 39(7).

Jia, C., Yang, Z., Xin, T., Li, Y., Wang, Y. & Yang, T. 2022. Differences in school performance between only children and non-only children: Evidence from China. *Front Psychol* 12: 608704. doi:10.3389/fpsyg.2021.608704.

Lao, Y. & Lin, S. 2022. Comparison of educational performance between the only children and children in two-child families. *Sci Rep* 12(1): 15355. doi:10.1038/s41598-022-19730-3.

Lei, X.Y., Xiao, L.M., Liu, Y.N. & Li, Y.M. 2016. Prevalence of depression among Chinese university students: A meta-analysis. *PLoS ONE* 11.doi: 10.1371/journal.pone.0153454.

Liu, H., Wang, J. & Chen, L. 2020. The impact of family environment on adolescent mental health: A focus on parental education levels. *International Journal of Mental Health Studies* 5(2): 134–145.

Li, J., Luo, C., Liu, L., Huang, A., Ma, Z., Chen, Y., ... & Zhao, J. (2024). Depression, anxiety, and insomnia symptoms among Chinese college students: A network analysis across pandemic stages. *Journal of Affective Disorders*, *356*, 54-63.

Liu, S.T., Zhang, X.J., Lu, S., Gao, H.B., Liu, H.Y., Ma, H.M., Sun, Y., Yue, L.M. & Ma, W.Y. 2018. The mental health status and personality of the only child and non-only-child students in middle school. *China J. Health Psychology* 26: 1433–1435.

Ma, Y., Zhang, B., Meng, Y., Cao, Y., Mao, Y. & Qiu, C. 2022. Perceived stress and depressive symptoms among Chinese college students: A moderated mediation model of biorhythm and ego resilience. *Front Public Health* 10:951717. doi:10.3389/fpubh.2022.951717.

National Bureau of Statistics. 2021. *China Statistical Yearbook*. Beijing: China Statistics Press.

Pizzagalli, D. A. (2014). Depression, stress, and anhedonia: toward a synthesis and integrated model. *Annual review of clinical psychology*, *10*(1), 393-423.

Radloff, L.S. 1977. The CES-D scale: A self-

report depression scale for research in the general population. *Applied Psychological Measurement* 1: 385–401.

Ren, X., Yu, S., Dong, W., Yin, P., Xu, X. & Zhou, M. 2017. Burden of depression in China, 1990–2017: Findings from the global burden of disease study. *J Affect Discord* 268: 95–101.doi: 10.1016/j.jad.2020.03.011.

Siddaway, A. P., Wood, A. M., & Taylor, P. J. 2017. The Center for Epidemiologic Studies-Depression (CES-D) scale measures a continuum from well-being to depression: Testing two key predictions of positive clinical psychology. *Journal of affective disorders, 213*, 180–186. https://doi.org/10.1016/j.jad.2017.02.015

Sun, Y. & Chen, J. 2024. The Depressive Tendency Questionnaire for Chinese Middle School Students: Development and Initial Validation. *Psychol Res Behave Manag* 17: 63–77. doi:10.2147/PRBM.S444403.

Tang, F., Byrne, M. & Qin, P. 2018. Psychological distress and risk for suicidal behavior among university students in contemporary China. *Journal of Affective Disorders*, 228: 101–108

Wang, Q., Zhao, L. & Li, Y. 2022. Vocational stress and depressive symptoms among Chinese university students. *Frontiers in Psychology* 13: 972–985.

Wu, Y., Sang, Z.Q., Zhang, X.C. & Margraf, J. 2020. The relationship between resilience and mental health in Chinese college students: A longitudinal cross-lagged analysis. *Front Psychol* 11. doi:10.3389/fpsyg.2020.00108.

Xiang, Y.H., Cao, R. & Li, X.J. 2024. Parental education level and adolescent depression: A multi-country meta-analysis. *Journal of Affective Disorders* 347: 645–655. https://doi.org/10.1016/j.jad.2023.11.081.

Yao, Y.M., Li, F. & Yin, W.Y. 2015. Forecast on the size and structure trends of the only-children under the new birth policy. *Zhejiang Univ* 45: 94–104.

Zhang, W., Sun, X. & Tang, F. 2021. Transition challenges: Understanding mental health risks among junior students in China. *Asian Journal of Social Science Research* 9(3): 89–101.

Zhao, S., Lin, L. & Liu, J. 2024. A study of the relationship between perfectionism and loneliness among young teachers in universities. *International Journal of Social Science and Business Management 2(01):228-240.* doi:10.59021/ijssbm. v2i01.99

Zhong, Y., Huang, X., Chen, J., Li, Y., Chen, R., Cong, E. & Xu, Y. 2023. The role of only-child status in the effect of childhood trauma and parental rearing style on depressive symptoms in Shanghai adolescents. *Front Psychiatry* 14: 1196569. doi:10.3389/fpsyt.2023.1196569.