

Employment-related anxiety and depression in senior college students in China

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Abstract: **Objective** To examine the association of employment-related events with depression and anxiety in senior college students in China. **Methods** Altogether 1 321 senior college students were recruited from Central South University and the survey was administered anonymously. Anxiety and depression were assessed with the Self-rating Anxiety Scale (SAS) and the Center for Epidemiologic Studies Depression Scale (CES-D), respectively. Employment-related events were reflected by the employment-related options when students were surveyed. Logistic regression was used to estimate the effect of employment-related events on anxiety and depression. **Results** We collected 1 178 valid questionnaires. Taking 50 and 16 as the cutting-point of SAS and CES-D, we found 18.9% and 55.4% of the participants showed symptoms of anxiety and depression, respectively. After controlling confounding factors, those students who had taken the entrance exam of graduate schools and were optimistic for the result, those who had taken the entrance exam of graduate schools but were pessimistic for the result, and those who neither took the entrance exam of graduate schools nor received a job offer, had a higher risk of anxiety than those who would attend a graduate school without exam, and the odds ratios were 2.5, 2.3, and 3.5, respectively. For students' depression, the odds ratios of the three categories mentioned above were 2.0, 1.5, and 2.6, respectively. **Conclusion** Senior college students who face bad employment-related events are at a higher risk of anxiety and depression.

Key words: employment; depression; anxiety; senior college students; China

就业与我国大学应届毕业生焦虑和抑郁的关系

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[摘要] **目的:**探讨大学应届毕业生就业相关事件与抑郁和焦虑的关系。**方法:**采用横断面研究对 1 321 名来自中南大学的应届毕业生进行匿名调查。采用自评焦虑量表(SAS)和美国 CDC 编制的流行

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病学调查用抑郁量表 (CES-D) 分别评价焦虑和抑郁情况。就业相关事件采用被调查时学生面临的就业选择来反映。采用 logistic 回归分析就业相关事件对焦虑和抑郁的影响。结果: 收到有效问卷 1 178 份。以 50 分和 16 分分别作为 SAS 和 CES-D 的判断临界值时, 分别有 18.9% 和 55.4% 出现了焦虑和抑郁。控制其他因素后, 考研且感觉良好、考研但感觉不是很好以及既未考研又目前没工作意向的学生出现焦虑的风险分别是直接保研且确定读研学生的 2.5, 2.3 和 3.5 倍 ($P < 0.05$); 上述 3 类学生出现抑郁的风险分别是直接保研且确定读研学生的 2.0, 1.5 和 2.6 倍 ($P < 0.05$)。结论: 就业意向较差的大学应届毕业生出现焦虑和抑郁的风险高于就业意向较好的学生。

[关键词] 就业; 抑郁; 焦虑; 大学应届毕业生; 中国

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Since the Ministry of Education of China initiated the popularization policy of higher education in early 1990s, more and more people have recently entered colleges to receive higher education. Accordingly, the number of graduates has increased from 1.15 million in 2001 to 5.59 million in 2008, and was predicted to reach 6.10 million in 2009^[1]. At the same time, the government cancelled the old policy of employment for graduates that almost guarantee each student of being able to have a job when the students graduated from colleges. Graduates have to seek a job by themselves. These changes resulted in emerging social problem—graduate unemployment. The official statistics showed that the employment rate for graduates was 70% in 2008^[2], suggesting that approximately 30% of them were unemployed after they left colleges.

Stress is defined as the adaptation response by the body to a stressor (i. e., the perceived stimulus)^[3]. A recent review indicated that acute stress responses in young healthy individuals may be adaptive and typically do not impose a health burden; however, if the threat continues, particularly in older or unhealthy individuals, the long-term effects of stress can damage health^[4]. Substantial evidences suggested a causal role for acute and chronic stresses in many medical disorders and psychiatric states^[3]. Recently, environmental stressor and genetics have been believed to determine individual response to stressor and the vulnerability to psychiatric disorders^[4-7].

Life events, particularly exit events and events regarded as undesirable, tend to cluster prior to onset

of depression^[8]. A survey by China Youth University for Political Sciences showed that 51% of participants (college students) regarded employment-induced stress as the first leading cause of psychological problems^[9]. A study by Yang, et al.^[10] revealed that the employment-induced stress was one of the most common stresses for medical postgraduates and was associated with common psychological symptoms. Song, et al.^[11] reported that stress from employment affected the attitude of medical graduates to committing suicide. More and more committed suicides have been reported to be related to employment-induced stress^[12-13]. To counteract the social pressure from employment for graduates, China has taken a lot of measures to create new opportunities of employment. However, few measures focused on helping college students who also faced the stress from employment-related events as graduates did.

Within the social environment that 30% of graduates cannot find a job, students have begun to shoulder more or less stress from employment since they enter colleges. The severity of stress was reported to increase gradually over time, and will reach the peak when the graduation approaches^[14]. Employment was ever linked to health by few existing studies, which indicated a significant relationship of health with unemployment and the type of employment^[15-18]. However, the relationship among employment-related events, anxiety, and depression has not been examined in college students. The primary aim of our study was to examine the association of employment-related events with depression and anxiety in senior college students in China.

1 MATERIALS AND METHODS

1.1 Subjects

A sample size of 1 046 participants was determined to detect a small effect for the correlation of employment with anxiety and depression ($r = 0.10$) at $\alpha = 0.05$ and $1 - \beta = 0.90$ ^[19]. Convenient sampling was used to obtain participants from senior college students of Central South University (Changsha, China). Our research plan had been approved by the Institutional Review Board of Central South University before the survey was started. Student participation was voluntary and anonymous. Their information was kept confidential.

1.2 Methods

The diathesis-stress model indicates that some individuals are vulnerable to stress-related diseases because either genetic weakness or biochemical imbalance inherently predisposes them to those diseases^[20]. Based on substantial evidences that some factors may affect the relationship between stress and diseases, Ogden^[21] proposed a theoretical framework for understanding the relationship between stressor and diseases. This framework includes psychological adaptation (coping, social support, control, and personality) in the process from stressor to diseases.

Based on Ogden's framework, we built 2 assumptions: (1) senior college students who faced different employment-related events might report the proportion of anxiety differently when confounding factors were considered; and (2) senior college students who faced different employment-related events might report high proportions of depression differently when confounding factors were controlled.

A cross-sectional survey was designed. The survey was conducted from February 16th, 2009 to March 1st, 2009.

1.2.1 Outcome variables

Zung's self-rating anxiety scale (SAS) was applied to assess the severity of anxiety symptoms. The validation study of SAS showed good reliability and validity in Chinese sample^[22]. For SAS, raw scores of 20 items were added and the total was transformed by dividing by 80 and multiplying by

100^{[23]302}. A higher score indicated greater anxiety. Zung proposed a cutting-point of 44/45 to indicate clinically the significant anxiety^{[23]350}. For Chinese sample, the cutting-point was determined as 50^[22]. We adopted 50 as the cutting-point of SAS in this study.

Depression was measured using a 20-item version of the Center for Epidemiological Survey, Depression Scale (CES-D). The Chinese version of CES-D had been tested in Chinese sample and showed good reliability and validity^[22]. Each question used 0 to 3 response scale. Scores were summed to provide an overall score ranging from 0 to 60 after reversing questions 4, 8, 12, and 16. A higher score indicated greater depression. Scores of 16 or higher were commonly accepted as indicative of depression^[23].

1.2.2 Independent variables

Employment-related events: when the senior college students were surveyed, they just took the entrance exam of graduate schools and the results of exam did not come out. At that time, there were 5 kinds of employment-related events for senior college students in total, including: (1) would attend a graduate school without exam; (2) took the entrance exam of graduate schools and optimistic for the result; (3) took the entrance exam of graduate schools but pessimistic for the result; (4) did not take the entrance exam of graduate schools but received a job offer; and (5) neither took the entrance exam of graduate schools nor received a job offer.

Considering that gender, place where students came from, individual expectation for working place and job income, social support, and self-efficacy may also affect individual response to employment-related events and the vulnerability to anxiety and depression, we included them in our survey.

Places where students came from included: (1) large city; (2) medium and small cities; and (3) rural areas.

According to the huge geographic variations in socio-economic status, we classified the expected working places into 5 categories: (1) Beijing, Shanghai, Guangzhou, and Shenzhen; (2) other

coastal cities; (3) inland provincial capital cities; (4) inland medium cities; and (5) others. The socio-economic status ranged from the best to the worse.

The expected monthly income was divided into grades: (1) $\geq 3\ 000$ Yuan; (2) 2 000-2 999 Yuan; (3) 1 500 – 1 999 Yuan; and (4) $< 1\ 500$ Yuan.

Social support was appraised with the 12-item Perceived Social Support Scale (PSSS), which measures the support from family, friends, or others. The Chinese version of PSSS displayed acceptable reliability and validity^[22]. An empirical criteria for judging social support was suggested as: strong, when total score was greater than or equal to 50 points; average, when total score fell into 33 ~ 49 points; and weak, when total score was less than or equal to 32 points^[24].

Self-efficacy was measured with the general self-efficacy scale (GSES), which was created to evaluate a general sense of perceived self-efficacy to predict coping with daily hassles as well as adaptation after experiencing all kinds of stressful life events^[22]. The Chinese version of GSES showed good reliability and validity^[22]. High composite scores mean high self-efficacy. Because no suggested criteria were found, we divided all students into 3 groups based on the distribution of composite score: high, when it was greater than $\bar{x} + s$; average, when it fell into $\bar{x} - s$ to $\bar{x} + s$; and low, when it was less than $\bar{x} - s$.

1.3 Statistical analysis

Questionnaires that contained 5 or more missing variables (unanswered questions) were excluded from the analysis. Due to the lack of sufficient information, we did not impute the missing values when analyzing the data. Logistic regression was used to estimate the effect of employment-related events. An $\alpha = 0.05$ was selected as the level of statistical significance. STATA 10.0 was used for data analysis.

2 RESULTS

Of 1 321 collected questionnaires, 1 178 (89.17%) met the criteria for data analysis. Males accounted for 69.10% of 1 178 valid responders. Students from

large cities, medium and small cities, and rural areas constituted 11.37%, 31.58%, and 54.16% of the sample, respectively (Tab. 1). Among all the subjects, 15.37% would attend the graduate schools without exam, 5.77% took the entrance exam of graduate schools and were optimistic for the result, 32.09% took the entrance exam of graduate schools but were pessimistic for the result, 31.24% did not take the entrance exam of graduate schools but received a job offer, and 14.86% neither took the entrance exam of graduate schools nor received a job offer.

Taking 50 and 16 as the cutting-point of SAS and CES-D respectively, we found that 18.9% and 55.4% of senior college students had anxiety and depression symptoms, respectively. The 95% confidence intervals (CI) for anxiety and depression were 16.7% to 21.2% and 52.6% to 58.3%, respectively (Tab. 1 and 2).

Without controlling other factors, students who neither took the entrance exam of graduate schools nor received a job offer were 1.9 times risk (odds ratio = 1.9) to experience anxiety symptoms than those who would attend the graduate school without exam ($P < 0.05$, Tab. 1). For depression, the risk of students who neither took the entrance exam of graduate schools nor received a job offer and students who took the entrance exam of graduate schools but were pessimistic for the result, was 2.0 and 1.8 times of those who would attend the graduate school without exam, respectively ($P < 0.05$, Tab. 2). Social support and self-efficacy were found to be significantly correlated with both anxiety and depression ($P < 0.05$). In addition, expected monthly income was associated with anxiety ($P < 0.05$).

When confounding factors were controlled, the effect of employment-related events still existed. Except for students who did not take the entrance exam of graduate schools but received a job offer, the other 3 categories were at least 2.3 times risk to experience anxiety than those who would attend the graduate school without exam ($P < 0.05$, Tab. 3). Similar results were observed for depression; the odds ratio varied from 2.0 to 2.6 ($P < 0.05$). Students who expected a monthly income of 2 000 –

2 999 Yuan and 1 500 – 1 999 Yuan had lower risk of anxiety than those who expected a monthly income less than 1 500 Yuan (odds ratio = 0.3 , 0.2). Students receiving weak social support and having

low self-efficacy were at higher risk of both anxiety and depression than those receiving strong support and having high self-efficacy ($P < 0.05$).

Tab. 1 Proportion of senior college students with self-reported anxiety symptoms

Variables	<i>n</i>	Proportion(95% CI)/%	<i>OR</i> ^Δ
Total	1 178	18.9(16.7 – 21.2)	
Gender			
Male	814	18.8(16.1 – 21.5)	Reference
Female	354	18.4(14.3 – 22.4)	1.0(0.7 – 1.3)
Missing	10		
Places where students came from			
Large city	134	22.4(15.3 – 29.5)	Reference
Medium and small cities	372	16.7(12.9 – 20.5)	0.7(0.4 – 1.1)
Rural areas	638	19.0(15.9 – 22.0)	0.8(0.5 – 1.3)
Missing	34		
Employment-related events			
Would attend a graduate school without exam	181	14.9(9.7 – 20.1)	Reference
Took the entrance exam of graduate schools and optimistic for the result	68	22.1(12.1 – 32.0)	1.6(0.8 – 3.3)
Took the entrance exam of graduate schools but pessimistic for the result	378	20.6(16.5 – 24.7)	1.5(0.9 – 2.4)
Did not take the entrance exam of graduate schools but received a job offer	368	16.0(12.3 – 19.8)	1.1(0.7 – 1.8)
Neither took the entrance exam of graduate schools nor received a job offer	175	25.1(18.7 – 31.6)	1.9(1.1 – 3.3) *
Missing	8		
Expected working places			
Beijing, Shanghai, Guangzhou, and Shenzhen	247	21.1(16.0 – 26.2)	1.5(0.8 – 2.7)
Other coastal cities	273	21.2(16.4 – 26.1)	1.5(0.8 – 2.7)
Inland provincial capital cities	285	17.5(13.1 – 22.0)	1.2(0.6 – 2.1)
Inland medium cities	246	15.4(10.9 – 20.0)	1.0(0.5 – 1.9)
Others	103	15.5(8.5 – 22.6)	Reference
Missing	24		
Expected monthly income/Yuan			
$\geq 3\ 000$	297	22.2(17.5 – 27.0)	0.4(0.2 – 0.8) *
2 000 – 2 999	523	16.8(13.6 – 20.0)	0.3(0.2 – 0.6) *
1 500 – 1 999	291	14.8(10.7 – 18.9)	0.3(0.1 – 0.5) *
< 1 500	45	40.0(25.5 – 54.5)	Reference
Missing	22		
Social support			
Strong	943	13.1(11.0 – 15.3)	Reference
Average	186	40.9(33.8 – 48.0)	4.6(3.2 – 6.5) *
Weak	31	61.3(43.8 – 78.7)	10.5(5.0 – 22.1) *
Missing	18		
Self-efficacy			
Strong	162	14.8(9.3 – 20.3)	Reference
Average	811	15.5(13.0 – 18.0)	1.1(0.7 – 1.7)
Weak	190	36.8(30.0 – 43.7)	3.4(2.0 – 5.7) *
Missing	15		

Δ Unadjusted odds ratio; * $P < 0.05$.

Tab. 2 Proportion of senior college students with self-reported depression symptoms

Variables	<i>n</i>	Proportion(95% CI)/%	<i>OR</i> ^Δ
Total	1 138	55.4 (52.6 – 58.3)	
Gender			
Male	786	53.2 (49.7 – 56.7)	Reference
Female	345	60.9 (55.7 – 66.0)	1.4 (1.1 – 1.8) *
Missing	47		
Places where students came from			
Large city	125	51.2 (44.9 – 60.0)	Reference
Medium and small cities	359	55.7 (50.6 – 60.9)	1.2 (0.8 – 1.8)
Rural areas	621	55.6 (51.6 – 59.5)	1.2 (0.8 – 1.8)
Missing	73		
Employment-related events			
Would attend a graduate school without exam	176	46.0 (38.6 – 53.4)	Reference
Took the entrance exam of graduate schools and optimistic for the result	65	56.9 (44.8 – 69.1)	1.5 (0.9 – 2.8)
Took the entrance exam of graduate schools but pessimistic for the result	366	60.9 (55.9 – 65.9)	1.8 (1.3 – 2.6) *
Did not take the entrance exam of graduate schools but received a job offer	354	50.8 (45.6 – 56.1)	1.2 (0.8 – 1.7)
Neither took the entrance exam of graduate schools nor received a job offer	171	62.6 (55.3 – 69.9)	2.0 (1.3 – 3.0) *
Missing	46		
Expected working places			
Beijing, Shanghai, Guangzhou, and Shenzhen	237	58.2 (51.9 – 64.5)	1.0 (0.6 – 1.6)
Other coastal cities	260	58.1 (52.1 – 64.1)	1.0 (0.6 – 1.6)
Inland provincial capital cities	277	51.3 (45.4 – 57.2)	0.8 (0.5 – 1.2)
Inland medium cities	243	54.3 (48.0 – 60.6)	0.9 (0.5 – 1.4)
Others	100	58.0 (48.3 – 67.7)	Reference
Missing	61		
Expected monthly income/Yuan			
≥3 000	289	55.7 (50.0 – 61.5)	0.8 (0.4 – 1.5)
2 000 – 2 999	500	55.8 (51.4 – 60.2)	0.8 (0.4 – 1.5)
1 500 – 1 999	285	54.0 (48.2 – 59.8)	0.7 (0.4 – 1.4)
< 1 500	44	61.4 (46.8 – 75.9)	Reference
Missing	60		
Social support			
Strong	923	51.8 (48.6 – 55.0)	Reference
Average	172	74.4 (67.9 – 81.0)	2.7 (1.9 – 3.9) *
Weak	28	67.9 (50.2 – 85.5)	2.0 (0.9 – 4.4)
Missing	55		
Self-efficacy			
High	157	26.8 (19.8 – 33.7)	Reference
Average	786	56.1 (52.6 – 59.6)	3.5 (2.4 – 5.1) *
Low	183	77.6 (71.5 – 83.7)	9.5 (5.8 – 15.6) *
Missing	52		

Δ Unadjusted odds ratio; * *P* < 0.05.

Tab. 3 Logistic regression for association of influencing factors and 2 psychological problems

Independent variables	Anxiety		Depression	
	OR ^Δ	95% CI	OR ^Δ	95% CI
Gender (Reference: Male)				
Female	0.9	0.6 – 1.4	1.3	1.0 – 1.7
Places where students came from (Reference: Large city)				
Medium and small cities	0.7	0.4 – 1.2	1.3	0.8 – 2.0
Rural areas	0.8	0.5 – 1.3	1.4	0.9 – 2.1
Employment-related events (Reference: Would attend graduate school without exam)				
Took the entrance exam of a graduate school and optimistic for the result	2.5	1.1 – 6.0 *	2.0	1.0 – 3.9 *
Took the entrance exam of graduate schools but pessimistic for the result	2.3	1.2 – 4.3 *	2.1	1.3 – 3.2 *
Did not take the entrance exam of graduate schools but received a job offer	1.7	0.9 – 3.2	1.5	1.0 – 2.4
Neither took the entrance exam of graduate schools nor received a job offer	3.5	1.8 – 7.0 *	2.6	1.5 – 4.3 *
Expected working places (Reference: Others)				
Beijing, Shanghai, Guangzhou, and Shenzhen	2.0	0.9 – 4.4	1.9	0.8 – 4.8
Other coastal cities	2.0	0.9 – 4.1	1.0	0.4 – 2.5
Inland provincial capital cities	1.5	0.7 – 3.2	1.6	0.7 – 3.9
Inland medium cities	1.3	0.6 – 2.8	1.3	0.5 – 3.2
Expected monthly income/Yuan (Reference: <1 500)				
≥3 000	0.5	0.2 – 1.2	0.6	0.2 – 1.6
2 000 – 2 999	0.3	0.1 – 0.7 *	0.6	0.2 – 1.5
1 500 – 1 999	0.2	0.1 – 0.5 *	0.5	0.2 – 1.2
Social support (Reference: Strong)				
Average	3.8	2.6 – 5.6 *	3.0	1.9 – 4.9 *
Weak	6.2	2.5 – 15.7 *	5.7	2.0 – 15.8 *
Self-efficacy (Reference: High)				
Average	1.0	0.6 – 1.7	4.1	1.2 – 13.5 *
Low	2.6	1.4 – 4.7 *	15.0	4.4 – 50.9 *

Δ Adjusted odds ratio; * $P < 0.05$.

3 DISCUSSION

Our findings revealed that there were 18.9% and 55.4% of senior college students having anxiety and depression symptoms, respectively. Compared with few published studies that used the same assessment tool and cutting-points, our research indicates high proportion of students having anxiety and depression symptoms. A study of 537 Chinese medical students (1997) showed that 12.5% scored over the cut-off point on the SAS to have anxiety symptoms^[25]. Song, et al^[26] reported that approximately 24.8% of college freshmen in Beijing had depression symptoms (the scores on the CES-D exceeding 16). The proportion of senior college students having anxiety symptoms even approached the level

of anxiety among inhabitants in the relief centers who experienced Sichuan earthquake (22.1%)^[27]. Although the screening results based on the suggested cutting-point cannot represent clinical diagnosis and might induce false-positive results^[23], these evidences suggest that college students with anxiety symptoms are more common now than 12 years ago, and senior college students have a higher risk of depression symptoms than junior college students.

As we assumed, our findings demonstrated the association of employment-related events with anxiety and depression in Chinese senior college students. Importantly, senior college students who faced relatively bad employment-related events were at a higher risk of anxiety and depression than those who faced good employment-related events, suggesting that special attention should be paid to these

students.

In China, undergraduates whose academic performances ranked in the top 10% in school will probably be exempted for the entrance exam of graduate schools. Of all senior college students, students who would attend the graduate school without exam were believed to face the best employment-related events since they need not to worry about employment until they complete the study of post-graduate in 3 years. When students who neither took the entrance exam of graduate schools nor received a job offer, they are believed to face the worst employment-related events. China has taken lots of actions to alleviate the social pressure from graduate employment, such as creating new employment opportunities for graduates, reducing the number of enrollment of majors that have low employment rate, and issuing policy that was aimed at enforcing ideological and political education of college students^[28]. However, these policies are insufficient because the government cannot create enough opportunities to guarantee a job for each student at present.

In this case, other considerations are needed to help senior college students who face bad employment-related events. Social support might reveal its beneficial effect on health and emotions only in times of distress, as it buffers the negative impact of stressful events^[29]. One's sense of self-efficacy can play a major role in how one approaches goals, tasks, and challenges^[30]. Our results indicate that social support and self-efficacy are correlated with anxiety and depression symptoms as well as employment-related events. Efforts that are aimed at enhancing social support to the high-risk senior college students and improving the self-efficacy of students may serve as optional measures of the government, and joint efforts should be taken to help senior college students cope with employment-related events.

This study has several limitations. First, our findings are limited by the representativeness of our sample. Students from Central South University cannot well represent all the college students of China although the sample is representative for the students of some Chinese universities. The effect of employment choice on anxiety and depression may change across schools. Second, the effect of employment-

related events may be underestimated due to the date of our survey (4 months before the graduation) since the severity of stress from employment was reported to increase as the graduation approaches^[14]. Third, the impact of genetics was not taken into account. The effects of genetics and date on psychological symptoms are needed to be considered in the future.

In conclusion, 18.9% and 55.4% of senior college students were found to have anxiety and depression symptoms. Students facing bad employment-related events were at a higher risk of anxiety and depression. Efforts should be made by the government, family, college, and students, to help senior college students cope with employment-related events.

REFERENCES:

- [1] 中国企业新闻网. 2009 年就业形势改革开放 30 年来最严峻的一年 [EB/OL]. (2008-12-12) [2009-4-23] http://www.cenn.cn/Fbzx/OakHtm//2009-1/11321_200912221536.shtml.
The Chinese Enterprise News Net. 2009, the most competitive year for employment since the implementation of Open and Reform policy [EB/OL]. (2008-12-12) [2009-4-23] http://www.cenn.cn/Fbzx/OakHtm//2009-1/11321_200912221536.shtml.
- [2] 闫晓虹. 2009 年大学生就业率 35% [EB/OL]. (2009-5-25) [2009-6-27] <http://hunan.voc.com.cn/article/200905/200905251602258940.html>.
YAN Xiaohong. The employment rate for graduates in 2009 was 35% [EB/OL]. (2009-5-25) [2009-6-27] <http://hunan.voc.com.cn/article/200905/200905251602258940.html>.
- [3] Sutherland J E. The link between stress and illness. Do our coping methods influence our health [J]. *Postgrad Med*, 1991, 89 (1) : 159-164.
- [4] Schneiderman N, Ironson G, Siegel S D. Stress and health: psychological, behavioral, and biological determinants [J]. *Annu Rev Clin Psychol*, 2005, 1 : 607-628.
- [5] Charney D S, Manji H K. Life stress, genes, and depression: multiple pathways lead to increased risk and new opportunities for intervention [J]. *Sci STKE*, 2004, 2004 (225) : re5.
- [6] Wurtman R J. Genes, stress, and depression [J]. *Metabolism*, 2005, 54 (5 Suppl 1) : 16-19.
- [7] Hammen C. Stress and depression [J]. *Annu Rev Clin Psychol*, 2005, 1 : 293-319.
- [8] Paykel E S. Life stress, depression and attempted suicide [J]. *J Human Stress*, 1976, 2 (3) : 3-12.

- [9] 郭少峰. 调查:就业压力过大造成大学生心理问题 [EB/OL]. (2005-9-15) [2009-5-11] <http://edu.people.com.cn/GB/1055/3696888.html>.
GUO Shaofeng. High employment pressure resulted in psychological problems in college students [EB/OL]. (2005-9-15) [2009-5-11] <http://edu.people.com.cn/GB/1055/3696888.html>.
- [10] 杨秀兰, 黄琳燕, 赵智, 等. 安徽医学院校毕业班研究生就业压力与心理健康相关性分析 [J]. 中国学校卫生, 2008, 29(12):1141-1142.
YANG Xiulan, HUANG Linyan, ZHAO Zhi, et al. The analysis of relationship between employment pressure of graduating class graduate in Anhui medical college and their mental health [J]. Chinese Journal of School Health, 2008, 29(12):1141-1142.
- [11] 宋湛, 邱培媛, 周欢, 等. 医学毕业生就业压力对自杀态度的影响研究 [J]. 现代预防医学, 2008, 35(5):905-907.
SONG Zhan, QIU Peiyuan, ZHOU Huan, et al. The research of the impact of employment pressure of senior college students on suicidal attitude [J]. Journal of Modern Preventive Medicine, 2008, 35(5):905-907.
- [12] 吴丽芳. 2004年-2009年大学生自杀事件调查 [EB/OL]. (2009-9-10) [2009-10-25] <http://www.hebei.com.cn>.
WU Lifang. Investigation the suicide events among college students between 2004 and 2009 [EB/OL]. (2009-9-10) [2009-10-25] <http://www.hebei.com.cn>.
- [13] 杜丁. 北京今年15名大学生自杀 专家吁建预警干预机制 [EB/OL]. (2005-11-16) [2009-5-25] <http://www.chinanews.com.cn/news/2005/2005-11-16/8/652271.shtml>.
DU Ding. Fifteen graduates committed suicide in Beijing [EB/OL]. (2005-11-16) [2009-5-25] <http://www.chinanews.com.cn/news/2005/2005-11-16/8/652271.shtml>.
- [14] 车文博, 张林, 黄冬梅, 等. 大学生心理压力感基本特点的调查研究 [J]. 应用心理学, 2003, 9(3):3-9.
CHE Wenbo, ZHANG Lin, HUANG Dongmei, et al. Research on the characteristics of psychological stress for college students [J]. Chinese Journal of Applied Psychology, 2003, 9(3):3-9.
- [15] Bèland F, Birch S, Stoddart G. Unemployment and health: contextual-level influences on the production of health in populations [J]. Soc Sci Med, 2002, 55(11):2033-2052.
- [16] Leder S. Unemployment and health [J]. Psychiatr Pol, 1994, 28(6):651-666.
- [17] Wilson S H, Walker G M. Unemployment and health: a review [J]. Public Health, 1993, 107(3):153-162.
- [18] Benavides F, Benach J. Types of employment and health: analysis of the Second European Survey on Working Conditions [J]. Gac Sanit, 1999, 13(6):425-430.
- [19] Cohen J. Statistical Power Analysis for the Behavioral Sciences [M]. 2nd ed, New Jersey: Lawrence Erlbaum Associates, Inc., 1988:109-144.
- [20] Brannon L, Feist J. Health Psychology: An Introduction to behavior and health [M]. 6th ed. Beijing: Peking University Press, 2007:143-144.
- [21] Ogden J. 健康心理学 [M]. 3版. 严建雯, 陈传锋, 金一波译. 北京: 人民邮电出版社, 2007:215-216.
Ogden J. Health psychology [M]. 3rd ed. Translated by YAN Jianwen, CHEN Chuanfeng, JIN Yibo. Beijing: Posts & Telecom Press, 2007:215-216.
- [22] 张作基. 行为医学量表手册 [M]. 北京: 中华医学电子音像出版社, 2005:213-214.
ZHANG Zuojì. Manual for behavior medicine scales [M]. Beijing: Chinese Medical Multimedia Press, 2005:213-214.
- [23] McDowell I. Measuring health: a guide to rating scales and questionnaires [M]. New York: Oxford University Press, 2006.
- [24] 中国心理学家网. 领悟社会支持量表及评分标准 [EB/OL]. (2007-5-4) [2009-8-14] <http://www.cnpsy.net/ReadNews.asp?NewsID=5207>.
The Chinese Psychologists Net. Perceived Social Support Scale and its criteria [EB/OL]. (2007-5-4) [2009-8-14] <http://www.cnpsy.net/ReadNews.asp?NewsID=5207>.
- [25] Liu X C, Oda S, Peng X, et al. Life events and anxiety in Chinese medical students [J]. Soc Psychiatry Psychiatr Epidemiol, 1997, 32(2):63-67.
- [26] Song Y, Huang Y, Liu D, et al. Depression in college: depressive symptoms and personality factors in Beijing and Hong Kong college freshmen [J]. Compr Psychiatry, 2008, 49(5):496-502.
- [27] 袁俊, 王鸣, 李铁钢, 等. 江油市402名地震灾后帐篷临时居住者焦虑状况调查 [J]. 中华预防医学杂志, 2008, 42(9):628-630.
YUAN Jun, WANG Ming, LI Tiegang, et al. Investigation of anxiety among 402 tent inhabitants in Jiangyou city after the 5.12 Sichuan earthquake [J]. Chinese Journal of Preventive Medicine, 2008, 42(9):628-630.
- [28] 教育部. 国家促进大学生就业 [EB/OL]. (2009-5-25) [2009-9-3] <http://www.moe.gov.cn/edoas/website18/zhuanti/2009jiuye/>.
The Ministry of Education of China. Promoting graduate employment in China [EB/OL]. (2009-5-25) [2009-9-3] <http://www.moe.gov.cn/edoas/website18/zhuanti/2009jiuye/>.
- [29] Wikipedia contributors. Social support [EB/OL]. (2009-10-25) [2009-11-21] http://en.wikipedia.org/w/index.php?title=Social_support&oldid=291124083.
- [30] Wikipedia contributors. Self-efficacy [EB/OL]. (2009-10-25) [2009-11-21] <http://en.wikipedia.org/w/index.php?title=Self-efficacy&oldid=294658063>.