DEVELOPMENT AND VALIDATION OF COLLEGE STUDENTS' STRESSFUL LIFE EVENTS QUESTIONNAIRE

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ABSTRACT

The purpose of this study aimed to develop and validate College Students' Stressful Life Events Questionnaire. The dimensions and core components of College Students' Stressful Life Events were constructed though literature review and qualitative consensus study. A cross-sectional survey of 824 participants was conducted. The reliability of the questionnaire was determined by internal consistency, the construct validity was assessed by exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), and the content validity was assessed by the Pearson correlation coefficient. From the literature review and qualitative methods, 16 questions of College Students' Stressful Life Events Questionnaire were developed, including 4 dimensions. The overall College Students' Stressful Life Events Questionnaire had good reliability and validity (Cronbach's α = 0.858, χ2/ df=2.987, RMSEA=0.049, CFI=0.979, IFI=0.979, NFI=0.968, GIF=0.960). In conclusion, College Students' Stressful Life Events Questionnaire. built in this study had good validity and reliability. It could be considered as a reliable tool to assess College Students' Stressful Life Events.

Key words: College Student Stressful Life Event Questionnaire development

Introduction

During college study and life, students have to face a lot of pressure, such as the study of professional knowledge, the training of operational skills and adapt to the college life and so on. As the psychology of college students is not fully developed and mature, the ability of self-control and self-regulation is lack, when facing some complex problems, they often produce anxiety, tension and other negative emotions

(Tindle Richard., 2022). These negative emotions will cause psychological confusion to individuals, and seriously lead to physical and mental diseases directly or indirectly. As one of the main factors affecting mental health, life events have attracted more and more attention (Pan Zhaoxia.,2022). Therefore, understanding the life pressure events faced by college students can provide theoretical basis for maintaining the healthy psychology of college students. there are few researches on stressful life events of college students. However, there are more studies on stressful life events mainly involves three aspects: the relationship between stressful life events and psychological diseases, the relationship between stressful life events and behaviors, and the relationship between stressful life events and physiological diseases.

At present, there are two commonly used stress Event scales. One is Life Event Scale (LES), which was compiled by Desen Yang and Yalin Zhang in 1986 according to domestic and foreign literature, The Social Readjustment Rating Scale (SRRS) and the actual situation in China. The other was the Adolescent Self-rating Life Event Checklist (ASLEC) compiled by Xianchen Liu in 1987(Ochoa Arnedo Cristian.,2022). At present, there is no stress event scale suitable for college students in the new era.

To sum up, the questionnaires, concepts and theories about stressful life events of college students need to be analyzed in a deeper level. Therefore, the purpose of this study is to sort out previous literature research, obtain the basic dimensions of college students' stressful life events questionnaire, and develop a college students' stressful life events questionnaire with good reliability and validity. In this process, we focus on solving the following two problems: one is to discuss the basic dimensions of college students' stressful life events; the other is to develop a scale to measure college students' stressful life events.

Methodology

Conceptual Framework and Hypotheses

From a review of the literature and interviews of experts, the conceptual framework illustrated in Figure1 was developed.

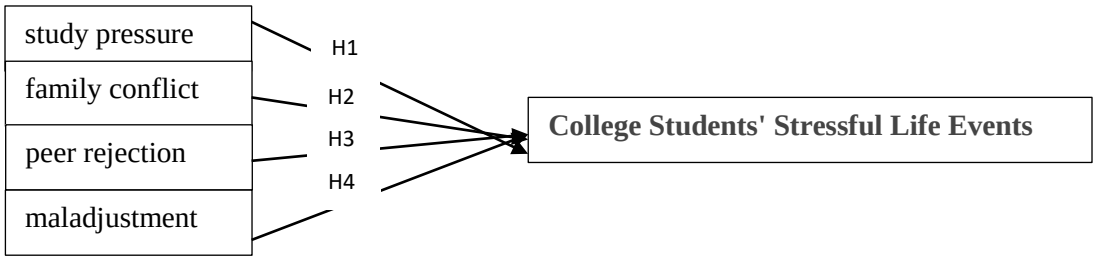

Figure1 *Conceptual Framework*

Four hypotheses regarding the posited relationships between the independent and dependent variables are as follows:

H1 Study pressure have a significant positive impact on College Students' Stressful Life Events.

H2 Family conflict have a significant positive impact on College Students' Stressful Life Events.

H3 Peer rejection have a significant positive impact on College Students' Stressful Life Events.

H4 Maladjustment have a significant positive impact on College Students' Stressful Life Events.

Initial Item Collection

The initial items used came from two sources-a literature review, and semi-structured in-depth interviews. Semi-structured in-depth interviews provided the other source of initial items. Based on an open questionnaire survey of 30 college students and interviews with 10 professional psychological consultants. A total of 42 key words about stressful life events faced by college students in daily study and life were summarized and extracted, and group discussion was conducted based on existing literature. At the same time, all items of the questionnaire were sent to professors, scholars and doctoral students in related fields for reading and evaluation, and the semantics and content expression of each item in the questionnaire were reviewed and considered. According to the proposed suggestions, the questionnaire items should be modified and adjusted to avoid misunderstandings or ambiguities. Then, all the items of the adjusted questionnaire were sent to professional teachers in some universities for review, and their opinions were sought so as to eliminate the words that were difficult to understand or too academic in the questionnaire items, thus ensuring the content validity of the questionnaire. Finally, a 20-item College Students' Stressful Life Events Questionnaire (preliminary version) was formed. Following the interviews, the text data was generated, followed by analysis and evaluation.

Tests of Validity and Reliability of the Scale

Population and Sample

Six universities in Shanxi Province of China were selected to conduct a questionnaire survey. Questionnaire data were collected through online distribution through questionnaire star, and a total of 844 questionnaires were recovered. Among them, 20 questionnaires with random answer tendency and incomplete questionnaire

were deleted. Finally, 824 valid questionnaires were obtained. The effective rate of the questionnaire was 97.63%.

Measurement

The whole preliminary questionnaire consists of the following four parts:(1) Instructions. Introduce the purpose of the study, the purpose of the questionnaire and the privacy confidentiality statement for respondents. (2) Answer instructions. Clearly explain the different degrees and grading standards of the 6-point scoring points. (3) Background information. This section mainly deals with the demographic information of the respondents. (4) Diagnostic items. It includes various items that measure stressful life events of college students. The scale adopts a 6-level scoring method, "0" means that there has been no such life event in the past year, 1= no impact, 2= means mild impact, 3= means moderate impact, 4= means severe impact, and 5=means extremely severe impact.

Data Collection

The participants were voluntarily recruited from September to November 2021. The investigators explained the investigation protocol to all 844 participants. Finally, e-written informed consent was obtained from 844 participants, 824 valid questionnaires were obtained. and the response rate was 97.63%. Five to ten times the number of questions were considered a rational amount to perform the reliability and validity tests. The College Students' Stressful Life Events Questionnaire contains 16 questions, so the sample size was between 90 and 160. Approximately 173 subjects were randomly selected as the sample size for Preliminary experiments (Guttersrud, 2014).

Statistical AnalysisAll the data should be reviewed by the investigator. After excluding the unqualified questionnaires, all questionnaires were entered through EpiData. Internal consistency and other parametric tests were computed by using SPSS and AMOS 24.0(SPSS, Inc., Chicago, IL, USA).

Results

Item analysis of predictive questionnaire

The valid data collected from the questionnaire were sorted according to the total score obtained from the questionnaire from the lowest to the highest, and 27% before and after all data were taken as the cut-off points of the high and low groups respectively. The low score is 54 points and below, and the high score is 68 points and above. Independent sample T test was used to test the differences between high and low groups in item scores, and correlation analysis was conducted between the scores of each item and the total score of the questionnaire. The results showed that the

correlation coefficients between all questions and the total score of the questionnaire were significantly different at the level of 0.01, indicating that all questions in the questionnaire had a good degree of identification, so all questions were reserved.

Exploratory factor analysis for predicting questionnaire structure

The validity was tested by KMO and Bartlett sphericity tests. Validity test is used to verify whether variables are independent of each other through Bartlett sphericity tests. The KMO value is greater than 0.7 and the statistical significance of Bartlett's sphericity test is 0.000<0.01, indicating good validity of data.

Table 1 *KMO and KMO and Bartlett's Test*

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.848
Bartlett's Test of Sphericity	Approx. Chi-Square	2539.673
	df	190
	Sig.	0.000

Exploratory factor analysis was further conducted to test the construction validity. According to the principle that the default eigenvalue of principal component analysis in factor extraction is greater than 1. It can be seen from Table 2 that factor extraction is carried out for the data collected from the questionnaire. The standard is that the default feature root is greater than 1 and the cumulative variance contribution rate is greater than 60%. The extraction explanation degree is good, indicating that the extracted factor has a good effect.

Table 2 *Total Variance Explained*

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.794	33.970	33.970	6.794	33.970	33.970	4.311	21.554	21.554
2	2.957	14.786	48.756	2.957	14.786	48.756	3.889	19.444	40.998
3	2.285	11.425	60.181	2.285	11.425	60.181	2.817	14.086	55.084
4	1.749	8.746	68.927	1.749	8.746	68.927	2.742	13.711	68.795
5	1.069	5.344	74.271	1.069	5.344	74.271	1.095	5.476	74.271
6	0.875	4.373	78.644						
7	0.811	4.057	82.701						
8	0.743	3.713	86.414						
9	0.453	2.265	88.679						
10	0.348	1.739	90.418						
11	0.337	1.683	92.100						

12	0.282	1.412	93.512
13	0.256	1.281	94.793
14	0.226	1.131	95.924
15	0.189	0.945	96.869
16	0.167	0.837	97.706
17	0.149	0.743	98.449
18	0.117	0.584	99.033
19	0.111	0.553	99.586
20	0.083	0.414	100.000

Construct factor load matrix. The factor load matrix reflects the degree of correlation between the original variable and each factor. In order to explain and name each principal factor more accurately, the maximum variance method is used to implement orthogonal rotation of factor load matrix. In the selection of measurement items, the size of factor load value is taken as the criterion of retention and elimination. The factor load matrix is established and the factor load less than 0.5 is eliminated. Items in the same column in the final factor arrangement are grouped in the same category. Each index passed KMO and Bartlett tests, and the explanatory variance of extracted factors was greater than 60%, and the loading of each factor was greater than 0.6. Dimension division is discriminative. Items in the same dimension are consistent, so they meet the requirements, indicating that the data has good validity. As can be seen from Table 3 below, factor loads of A4, A5 and C5 are all less than 0.5, and C4 enters into component 3, so these four questions are deleted.

Table 3 *Rotated Component Matrixa*

	Component				
	1	2	3	4	5
A1				0.861	
A2				0.807	
A3				0.803	
A4				0.488	
A5				0.492	
B1		0.798			
B2		0.811			
B3		0.836			
B4		0.850			
B5		0.854			
C1			0.875		
C2			0.926		
C3			0.886		
C4					0.864

C5		0.452	0.429
D1	0.893		
D2	0.883		
D3	0.891		
D4	0.898		
D5	0.905		

Reliability and validity tests of formal questionnaires

Demographic Characteristics

Questionnaire data were collected through online distribution through questionnaire star, and a total of 844 questionnaires were recovered. Among them, 20 questionnaires with random answer tendency and incomplete questionnaire were deleted. Finally, 824 valid questionnaires were obtained. The effective rate of the questionnaire was 97.63%.

Table 4 *Demographic characteristics of participants, n (%).*

		Frequency	Percent
grade:	freshmen	456	55.3
	sophomores	202	24.5
	juniors	123	14.9
	seniors	43	5.2
only children or non-only children	only children	231	28
	non-only children	593	72
Gender	Female	86	10.4
	Male	738	89.6
Family Residence	Cities and towns	349	42.4
	rural	475	57.6
Father's Education	junior high school or below	491	59.6
	high school or technical secondary school	250	30.3
	college or above	83	10.1
Mother's Education	junior high school or below	554	67.2
	high school or technical secondary school	212	25.7
	college or above	58	7
Father's career	brain workers	129	15.7
	non-brain workers	593	72
	unemployed	102	12.4
Mother's career	brain workers	105	12.7

	non-brain workers	477	57.9
	unemployed	242	29.4
Average monthly household income	≤6000 元	548	66.5
	6001-9000 元	197	23.9
	＞9000 元	79	9.6
Monthly disposable pocket money	≤600 元	325	39.4
	600-1200 元	359	43.6
	1200-1800 元	105	12.7
	>1800 元	35	4.2

Reliability and validity test of scale

The reliability test results show that the internal consistency, reliability and stability of the scale are good. As shown in the table below, Cronbach's **α** coefficient of Study pressure is 0.849, Cronbach's **α** coefficient of Family Conflict is 0.932, Cronbach's **α** coefficient of Peer Rejection is 0.916, Malajustment's Cronbach's **α** coefficient is 0.898, and the Cronbach's **α** coefficient of all variable scales is above 0.7, indicating that the scale has high reliability.

Table 5 *Reliability Test Results*

Variable	Item	Cronbach's **α** 系数
Study pressure	3	0.849
Family conflict	5	0.932
Peer rejection	5	0.916
Malajustment	3	0.898
Total questionnaire	16	0.858

AMOS 22.0 was used to construct the structural equation model to verify the rationality and validity of the questionnaire structure. At the same time, the fitting index of one factor, two factors (combining one, three and four factors to form two factor model), three factor model (combining two dimensions of one and three factors to form three sub-models) and four factor model were compared. Specific results are shown in the table 6 below.

Table 6 *The Model Fitting Index*

Model	factor	fit index							
		$\chi 2$	df	$\chi 2$/ df	CFI	GFI	IFI	AGFI	RMSEA
Model 1	1 factor A+B+C+D	5596.221	104	53.810	0.398	0.474	0.399	0.312	0.253
Model 2	2 factor A+C+D;B	2831.666	103	27.492	0.701	0.681	0.702	0.578	0.179
Model 3	3 factor A+C;B;D	1677.207	101	16.606	0.827	0.782	0.828	0.706	0.138
Model 4	4 factor A;B;C;D	292.683	98	2.987	0.979	0.960	0.979	0.960	0.049

A:Study pressure;B： Family conflict； C:Mala justment;D:Peer rejection

As can be seen from the above table, the fitting degree of the four-factor model is significantly better than that of other factor models.

Confirmatory Factor Analyses

On the basis of exploratory factors, the convergence validity of the scale will be tested in this chapter. In order to further verify whether the model structure proposed in this study is consistent with the obtained data, AMOS23.0 is used to conduct confirmatory factor analysis on variables for validity test. The fitting indexes of motivation scale were $\chi 2$/ df=2.987， RMSEA=0.049， CFI=0.979， IFI=0.979， NFI=0.968， GIF=0.960 respectively. It shows that the model fits well.

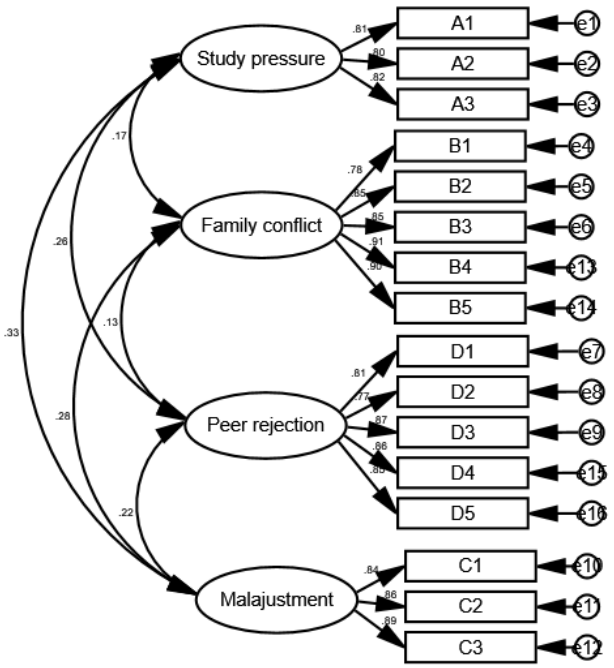

Figure2 *Confirmatory Factor Analysis Model*

Reliability Analysis Results

As can be seen from the table below, the factor coefficients of Study pressure, Family conflict, Malajustment and Peer Rejection are all above 0.5. It indicates that each latent variable has certain representativeness. In addition, AVE of Study pressure, Family conflict, Malajustment and Peer Rejection are all greater than 0.5, and CR is all greater than 0.7. It indicates the ideal convergence validity of Study pressure, Family conflict, Malajustment and Peer rejection.

Table 7 *The Composite Reliability Analysis*

Variable	Item	Unstandardized Estimate	SE	Z	P	Standardized Estimate	SMC	CR	AVE
Study pressure	A1	1.000				0.814	0.663	0.851	0.655
	A2	1.115	0.049	22.792	***	0.797	0.635		
	A3	1.130	0.049	23.125	***	0.817	0.667		
Family conflic	B1	1.000				0.776	0.602	0.933	0.737
	B2	1.089	0.040	27.089	***	0.853	0.728		
	B3	1.147	0.043	26.918	***	0.848	0.719		
	B4	1.211	0.041	29.498	***	0.911	0.830		
	B5	1.103	0.038	28.944	***	0.898	0.806		
Malajustment	C1	1.000				0.839	0.704	0.898	0.747

	C2	1.097	0.037	29.356	***	0.862	0.743		
	C3	1.065	0.035	30.270	***	0.891	0.794		
Peer rejection	D1	1.000				0.807	0.651	0.918	0.692
	D2	0.967	0.039	24.729	***	0.774	0.599		
	D3	1.125	0.039	28.944	***	0.869	0.755		
	D4	0.916	0.032	28.316	***	0.855	0.731		
	D5	0.976	0.035	28.063	***	0.850	0.723		

Discriminant Validity Analyses

As can be seen from the table below, there is a significant correlation between Study pressure, Family conflict, Malajustment and Peer rejection ($P < 0.01$). In addition, the correlation coefficients between latent variables are all less than the square root of AVE. It indicates that each latent variable has a certain correlation with each other and a certain degree of differentiation between them, indicating that the latent variable has good discriminative validity.

Table 8 *discrimination validity*

	1	2	3	4
Study pressure	0.809			
Family conflict	0.173**	0.858		
Peer rejection	0.257**	0.132**	0.864	
Malajustment	0.325**	0.282**	0.218**	0.832

** for $p < 0.01$.* for $P < 0.05$， The diagonal is the square root of AVE.

The Final Version of the Scale

The final version of the scale was established (Table 9); there were 16 items and four dimensions. Four items were eliminated from the initial list.

Table9 *The Final Version of the Scale*

Dimensions	**Number**	**Items**
Study pressure	Q8	Tension with teachers
	Q9	Failing or not doing well in an exam
	Q11	Heavy study burden
Family conflict	Q2	Acute illness of oneself or family member
	Q3	The family relationship is not harmonious
	Q4	Parents' divorce
	Q5	Family death

	Q6	Family financial difficulties
Peer rejection	Q1	Being out of love or in a bad relationship
	Q7	School bullying, verbal bullying
	Q10	Disputes or tension with classmates
	Q13	To be misunderstood or wrongly judged by one's peers
	Q14	Being discriminated against or isolated
Maladjustment	Q12	Significant changes in lifestyle
	Q15	Accidental shock, accident
	Q16	By fraud

Discussion

At present, there are two commonly used stress Event scales. One is Life Event Scale (LES), which was compiled by Desen Yang and Yalin Zhang in 1986 according to domestic and foreign literature, The Social Readjustment Rating Scale (SRRS) and the actual situation in China. The other was the Adolescent Self-rating Life Event Checklist (ASLEC) compiled by Xianchen Liu in 1987. At present, there is no stress event scale suitable for college students in the new era. Learn the latest research results of college students' stressful life events through literature, carefully listen to the opinions of more than ten experts, and conduct one-to-one interviews with students, design college students' stress event scale, predict the designed questionnaire, adjust the designed questionnaire according to the reliability and validity, and finally design a questionnaire with good reliability and validity. In the process of collecting and determining the items of College Students' Stressful Life Events Questionnair, this study always selects the items strictly in accordance with the procedures of questionnaire compilation. The formal questionnaire consists of four dimensions: study pressure (3 projects), family conflict (5 projects), peer rejection (5 projects) and maladjustment (3 projects) In addition, the design of the questionnaire items not only referred to the existing literature, but also interviewed psychological professionals. Therefore, both the specific content and related characteristics of each item in the questionnaire are in accordance with the actual situation and performance of college students in daily study and life. The research data showed that the internal consistency coefficient of College Students' Stressful Life Events Questionnaire was 0.858, which met the requirements of psychological measurement (Gliner, Morgan, & Harmon, 2001). Through confirmatory factor analysis, it is found that all the fitting

indexes in the four-factor model are good. Therefore, College Students' Stressful Life Events Questionnaire has good reliability and validity.

Limitations and Future Research

The major limitation of this study is that the data were collected from six universities in Shanxi Province, and the generalization of the research results has certain limitations. Future research will consider expanding research scope and research samples to acquire more representative research objects. From the perspective of dynamic development, it is an innovation of this study to use the newly compiled College Students' Stressful Life Events Questionnaire to measure college students' stress events. However, due to few previous studies and lack of comparative discussion, the research results need to be further confirmed in future studies. Different stress measurement tools can be used for comparison in future research.

Conclusion

College Students' Stressful Life Events Questionnaire is composed of four dimensions: learning pressure, family conflict, peer rejection and maladjustment. This questionnaire has good reliability and validity, so it can be used as an effective tool to measure college students' stressful life events.

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References

Guttersrud, O.; Dalane, J..; Pettersen, S. (2014). Improving measurement in nutrition literacy research using Rasch modelling: Examining construct validity of stage-specific 'critical nutrition literacy' scales. *Public Health Nutr*, 17, 877–883.

Jun, S., & Choi, E. (2015). Academic stress and Internet addiction from general strain theory framework. *Computers in Human Behavior*, 49, 282e287.

Ochoa Arnedo Cristian., Prats Clàudia., Travier Noemie., Marques-Feixa Laia., Flix-Valle Aida., de Frutos María Lleras., Domingo-Gil Esperanza., Medina Joan Carles., Serra-Blasco Maria. (2022). Stressful Life Events and Distress in Breast Cancer: A 5-Years Follow-Up. *Int J Clin Health Psychol*, 22(2), 100303.

Pan Zhaoxia., Zhang Dajun.(2022). Relationship between stressful life events and sleep quality: The mediating and moderating role of psychological suzhi. S*leep Med, 96(undefined)*, 28-34.

Tindle Richard., Castillo Paola., Doring Natalie., Grant Leigh., Willis Royce. (2022). *Developing and validating a university needs instrument to measure the psychosocial needs of university students*. Br J Educ Psychol, undefined(undefined), e12515.