

The influence of life stress on achievement motivation among college students

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Abstract: ***Objective** To explore the current situation of college students' life stress and achievement motivation, and explore the impact of life stress on college students' achievement motivation. **Methods** A stratified random sampling was used to select 743 undergraduates in Guangdong Province. They were investigated with Student-Life Stress Inventory (SLSI) and Achievement Motivation Scale (AMS). **Results** (1) The total scores of SLSI and AMS in this group were (181.64 ± 22.59) and (4.21 ± 12.28) respectively. (2) The students with high, medium and low life stress accounted for 16.7%, 68.9% and 14.4%, respectively. (3) Multiple stepwise linear regression analysis showed that the total score of AMS was negatively predicted by the scores of five dimensions: frustration, pressure, physiological response, emotional response and behavioral response ($\beta = -.342$ to $-.493$, all $P < .001$), while cognitive response positively predicted the total score of AMS ($\beta = .563$, $P < .001$). **Conclusion** College students have high level of life stress and low achievement motivation. Life stress may be one of the main influencing factors of college students' achievement motivation.*

Key words: College Students; Achievement Motivation; Influencing Factors; Multiple Linear Stepwise Regression

I. Introduction

Achievement motivation refers to the psychological process in which individuals are not only willing to and strive to implement activities of value or significance to themselves in order to achieve higher requirements. Proximity and avoidance are the two main characteristics of achievement motivation. The former is defined as the motivation to pursue success, and the latter is defined as the motivation to avoid failure. Achievement motivation is the intensity of motivation to pursue success minus the intensity of motivation to avoid failure. People with high achievement motivation are willing to find and implement effective strategies to complete various difficult tasks. They have strong self-confidence and strive to exert their potential, surpass themselves and others; People with low achievement motivation are usually afraid of failure or feel uncertain about the results, and are more prone to anxiety. They may take two different ways to deal with important tasks: the first way is to work hard to complete the task to avoid failure; The other way is defensive. That is to say that they try to evade the task to avoid failure [1].

Psychological stress also known as stress, refers to the psychological traumatic experience after people encounter stress events. It is the adaptive or reactive process when individuals face or perceive dangerous stimuli, which includes the following three aspects. The first aspect is exposure to stressful environments, such as work stress, academic stress and psychological distress. The second aspect includes physiological and emotional changes, such as changes in nervous, cardiovascular, digestive and endocrine systems, as well as depression, anxiety, anger, hostility and other emotions. The third aspect includes cognitive and behavioral

reactions, such as attack or escape [2]. Moderate psychological stress is adaptive, which can arouse and exert the potential of the body and enhance the ability of individuals to resist changes in the environment; While excessive or prolonged stress will lead to psychological imbalance and physiological dysfunction, and damage physical and mental health [3-5].

Previous research [6] pointed out that challenging scientific research stress enhances self-efficacy by stimulating achievement motivation, while obstructive scientific research stress reduces self-efficacy by inhibiting achievement motivation. It shows that different stress plays different roles in achievement motivation. As one of the important indicators of college students' mental health, the relationship between psychological stress and achievement motivation is of great significance in regulating college students' life stress, maintaining their physical and mental health, and cultivating their moderate achievement motivation.

II. Objects and Methods

2.1 Objects

Eight hundred undergraduates were selected with the stratified random sampling from the following 7 universities in Guangdong Province such as Shenzhen University, South China Agricultural University, Dongguan Institute of Technology, Guangdong Pharmaceutical University, Xinghai Conservatory of Music, Guangzhou Institute of Physical Education, and Guangdong University of Finance and Economics. A total of 743 valid questionnaires were collected, with an effective rate of 92.9%. The age was 18-25 years old (20.45 ± 2.26 years on average). Among there were 422 boys and 321 girls; 152 from Shenzhen University, 146 from South China Agricultural University, 138 from Dongguan Institute of Technology, 111 from Guangdong Pharmaceutical University, 64 from Xinghai Conservatory of Music, 55 from Guangzhou Institute of Physical Education, and 77 from Guangdong University of Finance and Economics; 196 freshmen, 175 sophomores, 177 juniors, 149 seniors and 46 seniors.

2.2 Tools

2.2.1 Student-Life Stress Inventory, SLSI

It is complied by Gadzella [7] and revised by Wang Xin [8] into Chinese version. SLSI is used to test the life stress and its response of college students in the past three months, with a total of 51 items, divided into two subscales of life stressors and stress response. The subscales of life stressors consists of five dimensions: frustration, conflict, pressure, change, and self-imposed, and the subscales of stress response consists of four dimensions: physiological, emotional, behavioral, and cognitive response. Likert 5-point scoring method is used to score from 1 to 5 points corresponding to "never" to "always". The higher the score, the greater the stress event or reaction.

The evaluation of stress level is based on $1 \bar{x} \pm 1s$, that is, total score $> 1 \bar{x} + 1s$ is high stress level,

total score $< 1 \bar{x} - 1s$ is low stress level, and $1 \bar{x} - 1s \leq \text{total score} \leq 1 \bar{x} + 1s$ is medium stress. In this study, the Cronbach's a coefficient of the total scale is 0.873, and the Cronbach's a coefficients of the two subscales of life stressors and stress response are 0.754 and 0.809, respectively.

2.2.2 Achievement Motivation Scale, AMS

Complied by Gjesme and Nygar (1970) [9], and revised by Ye Renmin and Hegtvet (1988)

[10] into Chinese version. There are 30 items in total, which are divided into two dimensions: the motivation to pursue success (Ms) and the motivation to avoid failure (Maf), with 15 questions for each dimension. Likert 5-point scoring method is adopted to score from 1 to 5 points corresponding to "very inconsistent" to "very consistent". The total score of achievement motivation is equal to the score of motivation to pursue success minus the score of motivation to avoid failure, that is, $AM = Ms - Maf$. So the score range of AMS is -60 to 60. The higher the total score, the stronger the achievement motivation. In this study, the

Cronbach's a coefficient of the total table is 0.826, and the Cronbach's a coefficients of Ms and Maf are 0.729 and 0.765, respectively.

2.3 Data Processing

SPSS 20.0 software is used for statistical analysis. The average scores and standard deviation of each scale are calculated with descriptive statistics; Pearson product correlation is used to explore the correlation between various variables; Multiple stepwise linear regression analysis is used to analyze the impact of stress on achievement motivation.

III. Results

3.1 Common method deviation test

Since the data are all from questionnaires (i.e. self-reported by the subjects), there may be common bias. Harman single factor test [11] is used to test the common method deviation. The results show that there are 12 factors with eigen value greater than 1, and the first factor explains 19.68% of the total variation, which is less than the critical standard of 40%. Therefore, the influence of common method deviation on the results of this study can be excluded.

3.2 The current situation of college students' life stress and achievement motivation

It can be seen from table 1 that the total scores of SLSI and stressors are at a high level, the score of stress response is at a medium level [7-8]; the scores of both motivation to pursue success and avoid failure are at a middle level, while the achievement motivation is at a low level [9].

The frequency statistics shows that 124 students have high stress, with the total score of SLSI above 138.57, accounting for 16.7%; 512 students have moderate stress level (i.e. the total score of SLSI is 93.39 to 138.57), accounting for 68.9%; 107 students have low stress level (that is, the total score of SLSI is below 93.39), accounting for 14.4%.

Table 1 Descriptive statistics of total scores and dimension scores of 2 scales (n=743)

Variable	M	SD	MinMax	M of items	Average SD of items
Seeking success	49.27	7.3332.00	67.00	3.28	0.49
Avoiding failure	45.06	8.3924.00	66.00	3.00	0.54
achievement motivation	4.21	12.28-22.56	31.44	0.14	0.41
Stressor	94.83	11.88	57.00 133.00	4.12	0.52
Frustration	25.27	4.22	9.00 32.00	3.61	0.60
conflict	13.63	2.38	4.00 17.00	4.54	0.79
pressure	18.68	3.06	6.00 24.00	4.67	0.77
Change	12.87	2.24	3.00 18.00	4.29	0.75

Self-imposed	24.38	3.49	7.00	27.00	4.06	0.58
Stress response	86.81	14.58	48.00	128.00	3.10	0.52
Physiological reaction	39.40	8.25	15.00	54.00	2.81	0.59
Emotional reaction	16.68	3.44	10.00	19.00	4.17	0.86
Behavioral Reaction	25.52	4.89	4.00	18.00	3.19	0.61
Cognitive response	5.21	2.04	2.00	9.00	2.61	1.02
Total score of SLSI	181.64	22.59	109.00	232.00	3.56	0.75

3.3 Correlation analysis between life stress and achievement motivation among college students

It can be seen from table 2 that the motivation to pursue success is significantly correlated with the scores of the eight dimensions of SLSI (except conflict) ($|r|=.092$ to $.372$); there is a significant correlation between the motivation to avoid failure and the scores of 9 dimensions of SLSI ($|r|=.190$ to $.440$); there is a significant correlation between achievement motivation and the scores of the eight dimensions of SLSI (except self imposed) ($|r|=.163$ to $.563$).

Table 2 Correlation analysis of AMS and SLSI (n=743)

Variable	Seeking success	Avoiding failure	achievement motivation
Stressor	-.118*	.242**	.131*
Frustration	-.264**	.440**	.327**
conflict	-.092*	.214**	-.189**
pressure	-.218**	.384**	-.336**
Change	-.051	.196**	-.123*
Self-imposed	-.136*	.190**	-.050
Stress response	-.327**	.258**	-.241**
Physiological reaction	-.180**	.251**	-.167*
Emotional reaction	-.234**	.352**	-.203**
Behavioral Reaction	-.172*	.269**	-.156*
Cognitive response	.374**	-.284**	.502**
Total score of SLSI	-.254**	.379**	.517**

Note: * $P<0.05$, ** $P<0.01$.

3.4 Multiple linear stepwise regression analysis of the predictive effect of SLSI scores on the total score of AMS

Taking the total score of AMS as the dependent variable and the scores of nine dimensions of SLSI as the independent variables, a multiple linear stepwise regression analysis is carried out within the 95% confidence interval, and the results are shown in table 3.

It can be seen from table 3 that the total score of AMS is positively predicted by the score of cognitive response ($\beta=.563$, $P<.001$), and negatively predicted by the scores of frustration, pressure, physiological response, emotional response and behavioral response ($\beta=-.342$ to $-.493$, all $P<.001$).

Table 3 Multiple linear stepwise regression analysis of the impact of the nine dimensions of

SLSI on the total score of AMS (n=743)								
Dependent variable	Independent variable	B	SE	β	t	P	R^2	Radj ²
the total score of AMS	Frustration	-5.282	.583	-.461	-7.792	<.001	.505	.501
	pressure	-4.927	.807	-.427	-9.466	<.001		
	Physiological reaction	-4.061	.624	-.358	-11.558	<.001		
	Emotional reaction	-5.572	.715	-.493	-5.397	<.001		
	Behavioral Reaction	-3.880	.706	-.272	-5.668	<.001		
	Cognitive response	6.499	.785	.563	6.69	<.001		

IV. Discussion

The total scores of life stress and stressors of this group are at a high level, and the stress response is at a medium level, while the achievement motivation is at a low level. Students with high, moderate and low stress account for 16.7%, 68.9% and 14.4% respectively. The above results are consistent with the results of previous studies [12-13], suggesting that the current college students' life stress is on the high side, and their achievement motivation is on the low side.

Multiple linear stepwise regression analysis shows that frustration, pressure, physiological response, emotional response, behavioral response and cognitive response are six independent predictors of the total score of AMS.

Frustration is the strongest independent influencing factor in the negative prediction of achievement motivation among stressors, which reflects the individuals' evaluation of the loss of their own resources. According to the resource conservation theory proposed by Hobfoll [14], we can explain the impact of stress on mental health from the dynamic perspective of resource gains and losses: there are generally four kinds of resources that are valuable to individuals: material resources (such as housing, car, economic sources, etc.), conditional resources (such as opportunities, rights, status and goals), energy resources (such as time and knowledge) and psychological characteristics (such as hope, etc.). When an individual is faced with the threat of resource loss, the actual occurrence of resource loss, or the failure to get a return on resource investment, psychological stress will occur, which will cause the individual to consume physiological and psychological resources to obtain defensive measures. Excessive consumption of resources will induce negative emotions and social adaptation problems of individuals. It can be seen that when one's own resources are lost or the input of resources cannot be rewarded, the individual's self-confidence will decline, and it will lead to the difficulty to discover and develop one's own potential, and then lose the motivation of behavior, and the achievement motivation as the high-level motivation of behavior will also be naturally suppressed.

Pressure is another stressor that plays an independent negative role in predicting achievement motivation, and its mechanism is to destroy the individual's psychological consistency. Antonovsky [15] believes that

psychological congruence is a controllable and meaningful general confidence tendency that individuals maintain when dealing with the stimulation of internal and external environment in life, which is composed of comprehensibility, controllability and significance. These three factors are dynamically related each other and can be summed up as cognitive self-confidence, problem-solving self-confidence and motivational self-confidence. It can be seen that psychological consistency is used to maintain individual physical and mental health under various stress environments. When the stress is too strong, the sense of psychological consistency is destroyed, which makes the individual unable to understand the nature, characteristics and the significance of coping with the stressor. More importantly, he thinks that he cannot control the situation and handle the stress events well, thus generating the intention of "escape" rather than "fight". That is to say, at this time, the individual's motivation to "avoid failure" is significantly enhanced, while the motivation to "pursue success" is significantly decreased, and the achievement motivation is weakened.

Physiological reaction, emotional reaction and behavioral reaction are negative independent predictors of total score of AMS. These three reactions are the negative performance of individuals under stress: physiological reactions consume the body's energy, hinder metabolism, and affect the absorption of nutrients and energy supplement. Emotional and behavioral reactions not only consume the energy of the body, but also hinder the work of rational thinking, because these two reactions will over-activate the function of sympathetic nervous system (SNS) and inhibit the function of parasympathetic nervous system (PNS). When excessive SNS activation occurs in the more primitive functional part of the central region of the brain, it will focus on basic reactions such as "fight or flight", thus limiting the higher-order cognitive function in the front of the brain, resulting in the inhibition of cortical, the ability to solve problems, and even more clearly thinking. At the same time, the heart rate further increases, resulting in unnecessary additional circulation, further activating the function of SNS, leading to more weakening of higher-order cognitive function.

Cognitive response is an independent positive predictor of the total score of AMS. It is obvious that when an individual is faced with a state of intense emotion, if he can calmly think about the situation and analyze whether the strategies used are effective, he will be more likely to find reasonable strategies to effectively solve problems, reduce the level of stress, improve psychological consistency, enhance self-confidence, and improve the motivation to success.

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