

# Development of the Mental Staleness Scale in College Students

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**【Abstract】 Objective:** Based upon literature and research work, a Mental Staleness Scale in College Students(MSS-CS) was designed in this work, and the reliability and validity were tested to determine the psychometric properties of this scale. **Methods:** 1500 questionnaires were tested in the first measurement, which contains 83 items. 1000 students were included in the formal measurement and 122 students were tested again four weeks later for investigating the test-retest reliability. Based on literatures review and opening questionnaire, original items were identified firstly. The formal scale was refined by using item analysis, parallel analysis, exploratory factor analysis(EFA) and confirmatory factor analysis(CFA). **Results:** MSS-CS included 17 items and was composed of three dimensions including cognitive staleness, emotional staleness, and control fatigue. Confirmatory factor analysis showed that the scale had good fit index:  $\chi^2/df=1.693$ , NFI=0.912, RFI=0.901, CFI=0.942, RMSEA=0.050. The internal consistency of MS-CS and the three sub-scales ranged from 0.881 to 0.738, and the test-retest coefficients were 0.854-0.798. There were significant positive correlations between total score and three dimensions( $r=0.793 \sim 0.459$ ) (absolute value) and among dimensions( $r=0.317 \sim 0.388$ ). The MSS-CS total score and three dimensions were significantly correlated with the criterion Maslach Burnout Inventory - Student Survey(MBI-SS) ( $r=0.465 \sim 0.819$ ). **Conclusion:** The MSS-CS with three sub-structures has good psychometric properties in Chinese college students.

**【Key words】** Mental staleness; College students; Cognitive staleness; Emotional staleness; Control fatigue

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## 大学生心理困乏问卷的初步编制

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**【摘要】 目的:**探索大学生心理困乏的理论构建及量表的编制。**方法:**运用开放式问卷、半结构访谈和内容分析相结合的质性研究方法,与探索性因素分析和验证性因素分析等相结合的量化研究方法,发放1500份问卷进行初测,再对1000名大学生进行正式施测,并对122名大学生间隔四周后进行重测。**结果:**心理困乏量表由17个项目构成,包含三个维度(认知困乏、情绪困乏、控制感困乏)。验证性因素分析表明该量表具有较好的拟合指标( $\chi^2/df=1.693$ , NFI=0.912, RFI=0.901, CFI=0.942, RMSEA=0.050),总量表及各维度的内部一致性为0.881~0.738,重测信度为0.854~0.798;心理困乏各维度之间的相关在0.317~0.388间(绝对值),各维度与总分的相关在0.459~0.793之间(绝对值),心理困乏各维度及总分与效标(Maslach倦怠量表-学生版)的相关系数在0.465~0.819之间(绝对值)。**结论:**大学生心理困乏由认知困乏、情绪困乏、控制感困乏三维构成,大学生心理困乏量表具有良好的信效度。

**【关键词】** 大学生; 认知困乏; 情绪困乏; 控制感困乏

## 1 Introduction

Mental staleness is a state of suboptimal health which can be defined as psychological anxiety and a

feeling of exhaustion caused by a high degree of tension or simple repetition of certain process during activities with only moderate intensity<sup>[1]</sup>. This sub-clinical mental staleness mainly reflects a decline of the ability to carry out mental and behavioral activities as a result of intense brain-work over a long period or negative environmental stimuli<sup>[2]</sup>. Although sub-health issues in psychiatry have received a great deal of attention<sup>[3]</sup>, mental staleness has often been overlooked and simply regarded as a sign of laziness.

The phenomenon of mental staleness is growing

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increasingly among college students over time, which exerts negative influence on their studies and daily life. This should be a matter of serious concern both for society and colleges. However, there have to date been few researches on mental staleness in college students. The closely relevant concepts with mental staleness are mental burnout<sup>[4]</sup> and mental boredom<sup>[5]</sup>, which both to some extent reflect individuals' negative physical and mental state.

The most widely accepted definition of mental burnout comes from researches by Raedeke(1997) and Smith(1986)<sup>[6]</sup>. Mental burnout is suggested as a series of symptoms of mental exhaustion under abnormal conditions, which is particularly evident in the careers with highly intense work, such as police, doctors, and high-performance athletes<sup>[7]</sup>. The mental burnout may be caused by tension, stress and anxiety. The longer the mental exhaustion persists, the more severe the consequence occurs. The main tool for measuring mental burnout is the Maslach Burnout Scale, which is composed of three dimensions, namely emotional exhaustion, depersonalization and a feeling of low personal accomplishment<sup>[8]</sup>. Emotional exhaustion is a profound reaction to emotional staleness. Depersonalization is essentially an individual's feeling of loss of control over their own life. A feeling of low personal accomplishment may imply the tendency of negative cognition in an individual. One recent study suggests cognitive assessment as one of the primary causes of mental burnout. Other studies have shown that mental staleness can appear before the appearance of mental burnout<sup>[7]</sup>. There is a negative correlation between mental staleness and the perception of social support, consciousness of ability and a feeling of exercising control over one's own life<sup>[9]</sup>.

Mental boredom mainly refers to a state of physical and mental burnout characterized by exhaustion and disillusion resulting from effort overload<sup>[10]</sup>. At present in China boredom among college students is often measured by the Learning Boredom Questionnaire Scale<sup>[11]</sup>. This is also made up of three dimensions: depression, aberrant behavior and a feeling of lack of personal accomplishment. These can fairly accurately reflect learning fatigue among college students. While de-

pression and aberrant behavior are manifestations of emotional staleness and reduced ability to control one's own life respectively, a feeling of lack of personal accomplishment implies a tendency towards negative self-cognition. One recent research suggests that learning fatigue in a student is a state of physical, emotional and mental burnout caused by long-term confinement to an environment dominated by academic requirements<sup>[12]</sup>. There are typical symptoms of fatigue and a state of depression, with mental staleness providing an early signs.

It can be seen from the findings above that mental staleness is an early sign of mental burnout and mental fatigue. Its components reflect three aspects: cognition, emotion, and a feeling of exercising control. Thus, early identification and recognition of mental staleness will be helpful for preventing mental burnout and fatigue to develop. At present, mental burnout and mental fatigue are not differentiated from mental staleness and, because of this, there will be obvious limits if we continue to use the explanation of mental burnout and mental fatigue when evaluating mental staleness in college students. However, no efficient questionnaires have to date been developed to screen and identify mental staleness in college students. Moreover, the conclusions derived from the Maslach Burnout Scale, in which the subjects are mainly athletes and practitioners of the professions, may not be available for college students. In order to more accurately explain the characteristics of mental staleness in college students, we need a precise definition of what is it.

## 2 Theoretical structure

Reviewing the studies conducted to date, we see that researchers have found mental staleness to be an early symptom of mental burnout and mental fatigue<sup>[13]</sup>. But at the same time there are significant differences in the way that mental staleness is understood. There are basically two approaches: one is to see mental staleness chiefly as a fatigue of the nervous system and cognitive function<sup>[14]</sup>; the other is to see it chiefly as an emotional fatigue experienced subjectively<sup>[15]</sup>. Both approaches have their limitations. The former ignores the inner experience and feelings when an individual is suf-

fering from mental staleness, while the latter ignores the damage to and weakening of mental functions observed in someone suffering from such a condition. Researches in the field of clinical psychology have found that the locus of control is also an important predictor for physical and mental health<sup>[16]</sup>. Locus of control refers to the individual perception that one can control their own mental activity, reflecting the ability of one's mental self-regulation. People will perform more positively when they believe they are able to exert controls over their environment. They can then make positive improvements when dealing with mental staleness. Research to date has found that locus of control plays a positive role as predictor in matters of mental health<sup>[17]</sup>.

The present study hypothesized that mental staleness included three dimensions, namely cognitive staleness, emotional staleness and a feeling of staleness that undermines the feeling of being in control of their lives (control fatigue). Based on the literatures<sup>[18]</sup> in this field, the present study aimed to compile a Mental Staleness Scale(College Students Version) in terms of those three dimensions(cognitive staleness, emotional staleness and control fatigue), for the purpose of providing a tool for screening mental staleness among college students.

### 3 Compilation of the scale

#### 3.1 Source of items

An open questionnaire for mental staleness was compiled on the basis of the concept and connotations of mental staleness and administered to totally 200 college students in Shaanxi Province, China. Once the responses had been collected, they were organized inductively and the items of the scale were compiled with reference to related scales, such as the Mental Boredom Scale<sup>[19]</sup>. After adjusting or removing the total score items in accordance with advice given by relevant psychological experts, we finally arrived at a Provisional Mental Staleness Scale. The scale was organized as a five-point Likert system. Participants were asked to indicate the extent to which each item described their own situation, the possible responses ranging from "not conform at all" (1) to "conform strongly" (5). Sophomores of one university were measured randomly using

the Provisional Mental Staleness Scale. They were required to answer on the spot and hand in their answers immediately. A total of 1500 questionnaires were given out, of which 1456 of the returned questionnaires were valid(97.0%). Data arrangement and analysis were performed using SPSS software. By using item analysis, the items at a low degree(less than 0.4) of identification were removed firstly. Then, factor analysis was carried out and items with factor loadings less than 0.5 were removed. This finally left 83 items in the formal scale structure.

#### 3.2 Participants

Sophomores from 9 universities in Shaanxi Province were measured collectively using the method of cluster stratified random sampling. The proportions of male and female were basically equal. A total of 1000 questionnaires were given out, all of which were returned(100% return rate) 0.985 of the returned questionnaires were valid(98.5%). Additionally, 122 students from 2 classes were retested after 4 weeks, of which 120 valid questionnaires were returned(98.3%).

#### 3.3 Statistical methods

Correlation analysis(homogeneity test and correlation analysis between factors), exploratory factor analysis and reliability analysis were performed using SPSS 18.0(Statistic Package for Social Science). Additionally, confirmatory factor analysis was performed on the structure of the scale using structural equation analysis software AMOS18.0 in order to test the structural validity of the scale.

### 4 Results

#### 4.1 Item homogeneity test

The higher the correlation between the items and the total score, the greater the homogeneity between the items will be. If the correlation between the items and the total score is not significant or lower than 0.4, it will be considered as lowly homogeneous with the whole theoretical structure and removed from the scale. Each item of the scale was encoded respectively as A1, A2, and A3... A83 and correlation analysis was performed between each item and the total score. The results are presented in Table 1.

As shown in Table 1, the correlation coefficients between A2, A5, A10, A13, A18, A23 and the total

score were less than 0.4. Therefore, these items were removed from the further exploratory factor analysis.

Table 1 Correlation between Each Item of MSS-CS and the Total Score

| 1       | 2       | 3       | 4       | 5       | 6       | 7       | 8       | 9       | 10      |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| A1      | A2      | A3      | A4      | A5      | A6      | A7      | A8      | A9      | A10     |
| 0.465** | 0.258** | 0.559** | 0.511** | 0.296** | 0.520** | 0.470** | 0.601** | 0.578** | 0.150*  |
| A11     | A12     | A13     | A14     | A15     | A16     | A17     | A18     | A19     | A20     |
| 0.472** | 0.587** | 0.073   | 0.541** | 0.608** | 0.638** | 0.598** | 0.165** | 0.634** | 0.565** |
| A21     | A22     | A23     | A24     | A25     | A26     | A27     | A28     | A29     | A30     |
| 0.631** | 0.560** | 0.120*  | 0.538** | 0.601** | 0.691** | 0.652** | 0.523** | 0.575** | 0.581** |
| A31     | A32     | A33     | A34     | A35     | A36     | A37     | A38     | A39     | A40     |
| 0.499** | 0.571** | 0.595** | 0.588** | 0.542** | 0.598** | 0.631** | 0.518** | 0.697** | 0.478** |
| A41     | A42     | A43     | A44     | A45     | A46     |         |         |         |         |
| 0.657** | 0.503** | 0.415** | 0.505** | 0.523** | 0.405** |         |         |         |         |

Notes: \*mean  $P < 0.05$ , \*\*mean  $P < 0.01$ .

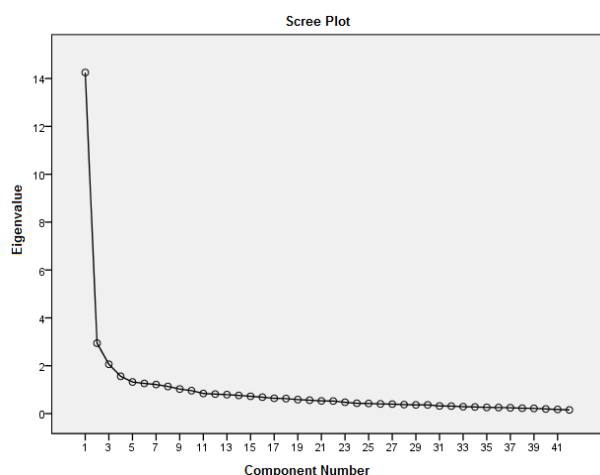


Figure 1 Exploratory Factor Analysis Scree Plot

Table 2 Item and Factor Loading

| Item | F1    | F2    | F3    |
|------|-------|-------|-------|
| A4   | 0.681 |       |       |
| A44  | 0.652 |       |       |
| A36  | 0.622 |       |       |
| A34  | 0.614 |       |       |
| A3   | 0.609 |       |       |
| A41  | 0.592 |       |       |
| A19  | 0.571 |       |       |
| A39  | 0.570 |       |       |
| A14  |       | 0.746 |       |
| A11  |       | 0.739 |       |
| A29  |       | 0.690 |       |
| A24  |       | 0.648 |       |
| A17  |       | 0.525 |       |
| A7   |       |       | 0.737 |
| A21  |       |       | 0.726 |
| A25  |       |       | 0.723 |
| A33  |       |       | 0.657 |

## 4.2 Exploratory factor analysis

The data( $n=985$ ) was divided into halves random-

ly, and on each half, the exploratory factor analysis and confirmatory analysis was performed respectively( $n=493/492$ ). Bartlett's spherical test( $\chi^2=5998.804$ ;  $P < 0.001$ ; KMO=0.924) showed that there were common factors between variables and that the variables were suitable for factor analysis. Principal component analysis was used to extract factors whose characteristic value was greater than 1, and it was converged after 21 iterations using the method of maximum rotation variance. In this way we obtained 9 factors whose characteristic value was greater than 1, with a cumulative explained variance of 63.74%. As showing in the scree plot(Figure 1), three factors were extracted from this scale, which was consistent with our hypothesis. The rotated component matrix showed the factor loading of each item, and the items with loading less than 0.5 would be removed. Finally, support was provided for the retention of three factors, respectively named cognitive staleness(F1), emotional staleness(F2) and control fatigue(F3). The cumulative explained variance of these three factors was 51.8%. The retained items and factor loadings were presented in Table 2.

## 4.3 Confirmatory factor analysis

In accordance with the scale dimensionality and the retained items obtained from the exploratory factor analysis, we built a verification model using the software AMOS to verify its structural validity. The results in the confirmatory factor analysis model were presented in the Figure 2 and Table 3. From Figure 2 it can be seen that the explanatory values of all the items in relation to the relevant factor were relatively strong, rang-

ing from 0.56 to 0.75. From Table 3 it can be seen that the factor analysis fit indices in the Mental Staleness Scale,  $CMIN/DF < 3$ ,  $RMSEA = 0.05$ ,  $NFI > 0.9$ ,  $RFI > 0.9$ ,  $IFI > 0.9$ ,  $TLI > 0.9$ ,  $CFI > 0.9$ , all met the psychometric requirements.

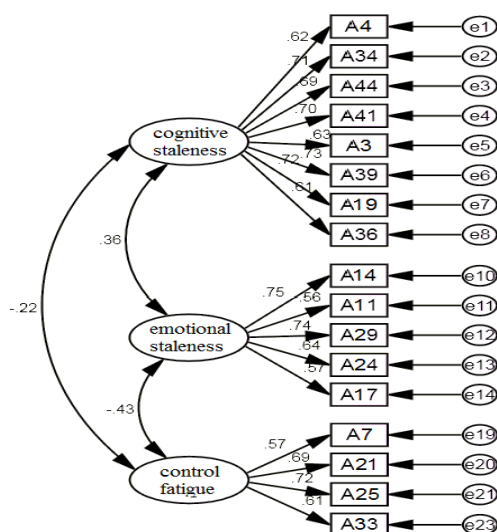


Figure 2 MSS-CS Confirmatory Factor Analysis Model

Table 3 MSS-CS Confirmatory Factor Analysis Fit Index

| CMIN/DF | NFI   | RFI   | IFI   | TLI   | CFI   | RMSEA |
|---------|-------|-------|-------|-------|-------|-------|
| 1.693   | 0.912 | 0.901 | 0.943 | 0.933 | 0.942 | 0.050 |

#### 4.4 Reliability analysis of the scale

The general reliability of this whole scale was 0.881(Cronbach's alpha), and the reliability of cognitive staleness, emotional staleness and control fatigue were 0.870, 0.738 and 0.780 respectively. Moreover, the retesting reliability of the whole scale and three sub-scales were 0.854, 0.798, 0.825 and 0.811 respectively.

Table 4 The Correlation between MBI-SS and MSS-CS' Dimensions and Total Score

| variable            | cognitive staleness | emotional staleness | control fatigue | MBI-SS (criterion) |
|---------------------|---------------------|---------------------|-----------------|--------------------|
| cognitive staleness |                     |                     |                 | 0.819**            |
| emotional staleness | 0.317**             |                     |                 | 0.613**            |
| control fatigue     | -0.388**            | -0.322**            |                 | -0.465**           |
| Total               | 0.793**             | 0.643**             | -0.459**        | 0.627**            |

#### 4.5 Criterion validity analysis of the scale

The results of criterion validity analysis on the Mental Staleness Scale's three dimensions<sup>[20]</sup> and total score were shown in table 4.

There were significantly positive correlations be-

tween the total score and three dimensions( $r = 0.793 \sim 0.459$ ) (absolute value) and among dimensions( $r = 0.317 \sim 0.388$ ). The MSS-CS total score and three dimensions were significantly correlated with the criterion MBI-SS( $r = 0.465 \sim 0.819$ ).

## 5 Discussion

Mental staleness is one of early symptoms of mental burnout and mental fatigue. Current questionnaires fail to screen and identify mental staleness in university students effectively. The Maslach Burnout Scale<sup>[8]</sup>, in which subjects were mainly athletes and practitioners of the professions, could not be extended to university students. And the Learning Boredom Questionnaire Scale was used to study fatigue experienced by a student<sup>[11]</sup>. However, there are many other causes of mental staleness in students besides these studies, such as, the staleness undermining the feeling of being in control of students' lives.

In the current study, we developed a mental staleness scale for college students. This scale contained three dimensions, namely cognitive staleness, emotional staleness, and control fatigue, which was consistent with our hypothesis. This three-component structure was also consistent with the theoretical framework of mental staleness, derived from mental boredom which is proposed by psychological thinking.

The internal consistency coefficients were among 0.738-0.881, and test-retest reliability were among 0.798-0.854. Confirmatory factor analysis showed that explanatory values of all factors were relatively strong, ranging from 0.56 to 0.75. All fit indices of factor analysis in the Mental Staleness Scale( $CMIN/DF = 1.693$ ,  $NFI = 0.912$ ,  $RFI = 0.901$ ,  $IFI = 0.943$ ,  $TLI = 0.933$ ,  $FI = 0.942$ ,  $RMSEA = 0.05$ ) met the psychometric requirements. The result showed that the mental staleness scale displayed suitable reliability and high validity, and could be used to measure the mental staleness of college students.

Although the definition of mental staleness largely stemmed from that of mental boredom and of learning boredom, the phenomenon of mental staleness is broader in scope than them. According to the Maslach definition<sup>[8]</sup>(the most widely quoted to date), mental boredom



referred to a psychological syndrome which resulted from responses to emotional and interpersonal tensions at work over a long period of time. It was made up of three dimensions: emotional exhaustion, depersonalization and a feeling of lack of personal accomplishment. The concept of learning boredom was mainly derived from that of mental boredom, with the existence of negative emotional experiences, a pessimistic attitude and a lack of faith in their ability to cope with difficulties that arise in their studies. Schaufeli<sup>[21]</sup> determined three dimensions of learning boredom, namely emotional exhaustion, cynicism and lack of professional efficacy. Emotional exhaustion was an experience of tension, accompanied by mental boredom, due to study stress overload. This experience only referred to study-related activities. Cynicism reflected an indifference to study on the part of a student as well as a strong feeling of conflict and alienation towards their studies. A feeling of lack of professional efficacy implied low accomplishment behaviors in social and non-social aspects. Researchers<sup>[21]</sup> believed that students suffering from mental staleness were those students who displayed cognitive bias, negative emotion and alienating behaviors with respect to learning activities. Surveys<sup>[22]</sup> conducted in China revealed that mental staleness is relatively widespread and serious among Chinese college students.

The results of the present study showed that mental staleness among university students was mainly manifested in cognitive staleness, emotional staleness and control fatigue. As an analysis of the questionnaire conducted in the present study revealed, there was a significant negative correlation between a feeling of exercising control, and cognitive and emotional staleness. In other words, a feeling of exercising effective control could successfully reduce an individual's negative emotional experience, such as nervous tension, stress and depression, increase their cognitive ability and also alleviate mental staleness.

Cognitive staleness was a crucial dimension of mental staleness and it also led university students to a state of confusion. Cognitive staleness was mainly manifested in the ability to create meaning in one's own life. Bianca<sup>[23]</sup> believed that humans have information

processing abilities, and it could enable people to understand how to put meaning into their life. However, if a student suffered from staleness undermining their perception of meaning in their own life, he would result in confusion and fall into a passive inability. Furthermore, Geoff<sup>[24]</sup> suggested that individuals ought to establish a mental representation of expected relationships, which would link up the elements of the outside world and of the self inside. Especially to a person's ability to create meaning in their life, Cognitive staleness was regarded to an important cause of mental problems and suicidal behavior. Some researches<sup>[25]</sup> proved that People who lacked an understanding of life's values might have suicidal thoughts. If cognitive staleness could be identified and improved to some extent by intervention, it would enhance the university students' ability to tolerate stress and cope with setbacks, and in this way mental staleness would be alleviated at source.

Emotional staleness was also a critical factor in mental staleness. It was the early symptoms of emotional burnout. Once a state of emotional burnout was reached, adjustment would become harder and mistakes might easily be made in recognition, evaluation and intervention decisions. Many psychological problems originated from a contradiction between feelings of emptiness in life. Emotional staleness was described as a situation in which the sufferer was lacking in energy, often felt tired at work and sensed that they had used up all their inner resources. In this research it was also found that emotional staleness among students was a relatively good predictor of mental staleness.

Control fatigue would be likely to generate nervous tension and anxiety when an individual was facing a threatening situation and felt at a loss for obviously suitable counter-measures. It was mainly used to examine why and when some people had positive attitudes while others have negative ones in dealing with difficult situations. Different attitudes led to different subjective judgments, In particular, it would be turned out that subjective judgments played the important roles by an individual's abilities, efforts. Throughout an individual's life and in all their perceptions and beliefs, a feeling of exercising control may be the most crucial, providing the cognitive foundation for experiential opti-

mism and hope. It tended to affect an individual's thinking patterns, emotional responses and the way behaviors are generated directly or indirectly.

In conclusion, the Mental Staleness Scale for College Students has good validity and reliability, which meets the psychometric requirements and can be applied in the Chinese college students.

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