

Mediating Effect of Character Strengths and Psychological Resilience between Life Stress Events and Subjective Well-Being among Medical Students

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Abstract: To explore the mediating effects of character strengths and psychological resilience between life stress events and subjective well-being among medical students, 537 medical students were investigated, using a cross-sectional design, and evaluated by Chinese Character Strengths-24 (GACS-24), Resilience Scale (CD-RISC), Adolescent Self-Rating Life Stress Events Check-list (ASLEC), and WHO-5 Well-Being Index (WHO-5). SPSS 26.0 was used for descriptive statistics and correlation analysis; PROCESS 3.5 was used for regression analysis and mediation effect testing. The scores of GACS-24, CD-RISC, ASLEC, and WHO-5 were (3.43±0.44), (25.30±6.10), (39.23±27.44), (22.32±14.73). Life stress events were negatively associated with character strengths, psychological resilience, and subjective well-being ($r=-0.21, -0.27, -0.22; P<0.001$); Subjective well-being was positively correlated with character strengths and psychological resilience ($r=0.52, 0.48; P<0.001$); Three mediating paths were identified: (1) life stress events through character strengths to subjective well-being; (2) life stress events through psychological resilience to subjective well-being; (3) life stress events through character strengths and psychological resilience to subjective well-being. All paths were significant, the effect sizes were -0.077, -0.019, and -0.027, which accounted for 35.98%, 8.88%, and 12.62% of the total effect (-0.214), and the mediating effect values for character strengths and psychological resilience was -0.123, accounting for 57.48% of the total effect. The influence of life stress events on subjective well-being can be reduced by improving the character strengths and psychological resilience of undergraduate students.

Keywords: Life Stress Events, Subjective Well-Being, Character Strengths, Psychological Resilience

1. Introduction

Subjective well-being is a cognitive evaluation that reflects an individual's level of satisfaction with their own life^[1]. The Bio-social-cognitive theoretical model suggests that factors that affect subjective well-being can be divided into internal cognitive and external environmental factors. The former mainly refers to coping with styles^[2], personality traits^[3], psychological resilience^[4], etc, while the latter relates primarily to demographic variables^[5], social support^[6], life stress events^[7], etc. Character strengths are positive personality traits that reflect an individual's cognition, behavior, and emotions^[8]. Previous studies have found that the vast majority of character strengths, such as hope and optimism^[9], agreeableness^[10], and transcendence^[11], have a positive predictive effect on subjective well-being. Psychological resilience refers to an individual's good adaptation process when facing and coping with negative life stress events, which can help individuals recover from significant stress^[12]. Individuals with high levels of psychological resilience can demonstrate good adaptability and psychological resilience when facing stressful events, actively cope with stress and challenges, and thus improve their subjective well-being level^[13-14]. Life stress refers to negative stress events that people encounter in their lives that may cause tension^[15] and are psychological and social stressors. Previous studies have shown that life stress events can not only directly affect subjective well-being^[16], but also have indirect effects through beliefs in justice^[17], character strengths^[18], psychological resilience^[19], and so on. Therefore, this study explores the impact of life stress events on the subjective well-being of medical students, as well as the mediating role of personality traits and psychological resilience between the two, to provide reasonable suggestions for improving the subjective well-being of medical students.

2. Research Object and Methods

2.1 Research Object

A convenience sampling method was used to conduct a questionnaire survey on 580 undergraduate students who voluntarily participated in this study at a medical university in Guangdong Province. A total of 537 valid questionnaires were collected, with an effective response rate of 92.6%. Among them, there were 170 first-year university students (31.7%), 182 second-year students (33.9%), 107 third-year students (19.9%), and 78 fourth-year students (14.5%); 218 males (40.6%) and 319 females (59.4%).

2.2 Research Methods

2.2.1 Research Tools

(1) The Global Assessment of Character Strengths 24 (GACS-24) [20-21]. There are a total of 24 items. This scale adopts a "1-5" five-point scoring system, with an average score of 24 items to evaluate character strengths. The higher the score, the higher the level of character strengths. The Cronbach's alpha coefficient was 0.78.

(2) The Connor Davidson Resilience Scale (CD-RISC) [22]. It was revised by Campbell Hills et al. with a total of 10 entries. This scale adopts a five-point rating system, where the scores of each item are added together to form a score for psychological resilience, ranging from 10 to 50 points. The higher the total score, the higher the level of psychological resilience. The Cronbach's alpha coefficient was 0.92.

(3) The Adolescent Self-Rating Life Stress Events Check List (ASLEC) [23]. This scale was developed by Liu Xiachen to assess the impact of life-stress events on individuals. Using a "0-5" six-point rating system, there are a total of 27 items with a score range of 0-135 points. The higher the total score, the greater the impact of life-stress events on individuals. The Cronbach's alpha coefficient was 0.90.

(4) Subjective Well-Being Index (WHO-5) [24]. This scale evaluates an individual's subjective well-being level over the past two weeks, using a "0-5" six-point rating system with a total of 5 items. The scores for each item are added together to form a coarse score, which is then multiplied by 4 to obtain a standard score. The score range is from 0 to 100, with higher total scores evaluating higher levels of subjective well-being. The sensitivity of the scale was 0.86, the specificity was 0.81, and the Cronbach's alpha coefficient was 0.94.

2.2.2 Statistical Processing

SPSS 26.0 and the PROCESS plugin were used to perform descriptive statistics, correlation analysis, regression analysis, and mediation effect analysis. Using the Harman single-factor test, the results showed that there were 14 factors with eigenvalues greater than 1, and the maximum factor explained 21.65% of the variance, which was less than the critical value of 40% [25], indicating that there was no significant common method bias.

3. Results

3.1 Descriptive Statistics and Correlation Analysis Between Variables

The correlation analysis results showed that life stress events were significantly negatively correlated with character strengths, psychological resilience, and subjective well-being ($r=-0.21, -0.27, -0.22$; $P<0.01$); Subjective well-being is significantly positively correlated with personality traits and psychological resilience ($r=0.52, 0.48$; $P<0.01$). See *Table 1*.

Table 1: Descriptive Statistics and Correlation Analysis (n=537)

| Variables | $M\pm SD$ | 1 | 2 | 3 | 4 |
|-----------------------|-------------|---------|---------|---------|---|
| 1 Character strengths | 3.43±0.44 | 1 | | | |
| 2 Resilience | 25.30±6.10 | 0.77** | 1 | | |
| 3 Well-being | 39.23±27.44 | 0.52** | 0.48** | 1 | |
| 4 Life stress events | 22.32±14.73 | -0.21** | -0.27** | -0.22** | 1 |

Note: ** $P<0.01$

3.2 Chain Mediation Effect Test of Character Strengths and Psychological Resilience

Under controlling for gender and grade variables, regression analysis showed that life stress events had a significant negative impact on character strengths and psychological resilience ($\beta=-0.21$, $\beta=-0.11$, $P<0.001$); character strengths significantly positively affect psychological resilience ($\beta=0.74$, $P<0.001$); life stress events have a significant negative impact on subjective well-being ($\beta=-0.09$, $P<0.05$); psychological resilience and character strengths can significantly positively predict subjective well-being ($\beta=0.17$, $P<0.01$; $\beta=0.37$, $P<0.001$). See Table 2.

The results of the mediation analysis showed that life stress events had a significant direct effect on subjective well-being, with an effect value of -0.09; character strengths and psychological resilience accounted for 57.48% of the total effect of life stress events on subjective well-being, with an effect value of -0.123. There were three pathways through which life stress events had an indirect impact on subjective well-being. Indirect effect 1: In the pathway of life stress events \rightarrow character strengths \rightarrow subjective well-being and the indirect effect was -0.077. Indirect effect 2: In the pathway of life stress events \rightarrow psychological resilience \rightarrow subjective well-being, and the indirect effect was -0.019. Indirect effect 3: In the pathway of life stress events \rightarrow character strengths \rightarrow psychological resilience \rightarrow subjective well-being, and the indirect effect was -0.027. See Table 3 and Figure 1.

Table 2: Regression analysis between variables

| Regression equation | | Overall fitting index | | | Standardized regression coefficient | |
|---------------------|---------------------|-----------------------|----------------|-----------|-------------------------------------|----------|
| Outcome variable | Predictor variable | R | R ² | F | β | t |
| Character strengths | Life stress events | 0.21 | 0.04 | 24.19*** | -0.21 | -4.92*** |
| Resilience | Life stress events | 0.78 | 0.60 | 397.03*** | -0.11 | -3.95*** |
| | Character strengths | | | | 0.74 | 26.46*** |
| Well-being | Life stress events | 0.54 | 0.29 | 73.07*** | -0.09 | -2.39* |
| | Resilience | | | | 0.17 | 2.96** |
| | Character strengths | | | | 0.37 | 6.47*** |

Note: * $P<0.05$, ** $P<0.01$, *** $P<0.001$

Table 3: Mediating effect analysis of character strengths and psychological resilience

| | Indirect effect value | Boot standard error | 95% CI lower limit | 95% CI upper limit |
|------------------------|-----------------------|---------------------|--------------------|--------------------|
| Total indirect effects | -0.123 | 0.024 | -0.173 | -0.078 |
| Indirect effects 1 | -0.077 | 0.020 | -0.119 | -0.042 |
| Indirect effects 2 | -0.019 | 0.008 | -0.038 | -0.005 |
| Indirect effects 3 | -0.027 | 0.011 | -0.050 | -0.008 |

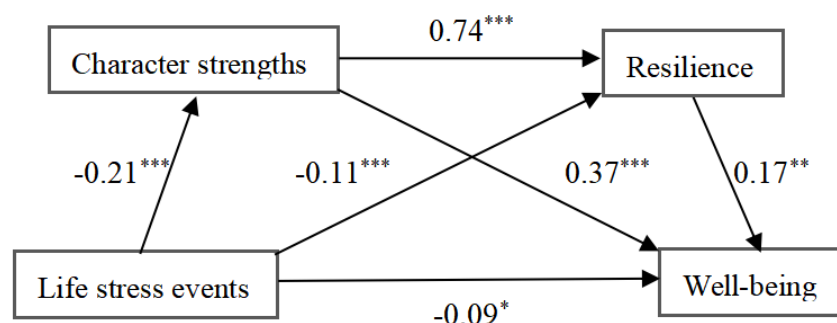


Figure 1: The Chain Mediating Effect of Character Strengths and Psychological Resilience

Note: * $P<0.05$, ** $P<0.01$, *** $P<0.001$

4. Discussion

This study found that there was a significant negative correlation between life-stress events and subjective well-being, meaning that the more life-stress events an individual experiences from family, society, and interpersonal relationships, the more negative emotional experiences they have, which directly impacts subjective well-being, consistent with previous research^[26]. The stimulus theory model of stress suggests that external environmental stimuli in daily life can cause adverse reactions in people, leading to negative emotions such as tension and depression, and affecting individual subjective well-being^[27]. Previous studies have shown^[28] that college students, as a young group, have immature psychological defense mechanisms. The more adversity they encounter in academic and employment pressures, the lower their ability to resist setbacks and the more difficult it may be to withstand the negative effects of stress. Their subjective well-being may also be lower.

Character strengths mediated the relationship between life stress events and subjective well-being, which was consistent with previous research^[29]. Scholars in Western positive psychology have proposed theories about happiness, such as Headey's dynamic balance theory^[30], which states that under the interference of external factors such as family factors and life stress events, an individual's level of happiness will return to its initial equilibrium state after a certain period through personality balance. Character strength, as a positive and stable personality trait, can stimulate the internal protective mechanism of undergraduate students when they are in a tense environment or anxious state, adopt positive ways to face and handle stressful events, and maintain subjective well-being^[31].

Psychological resilience played a mediating role between life stress events and subjective well-being, which was consistent with previous research^[32]. Individuals with higher levels of psychological resilience are better able to maintain a positive attitude when facing stressful events, utilize internal resources to help individuals adapt to stress, and take reasonable measures to recover from life stress. Therefore, their subjective sense of well-being is also higher.

Character strengths and psychological resilience played a chain mediating effect between life stress events and subjective well-being. This result indicated that character strengths and psychological resilience were important internal factors that influence subjective well-being in life stress events. As an external factor, life stress events can have a direct impact on subjective well-being, but after adding two internal factors, character strengths, and psychological resilience, the impact of life stress events on subjective well-being was weakened. When negative life stress events increase, individuals generate more negative emotions, which can easily lead to a lack of hope, courage, and motivation to solve problems. This can result in individuals adopting negative coping strategies, causing their ability to adapt to stressful environments and hindering the formation of their character strengths and psychological resilience, ultimately affecting their sense of happiness. This is consistent with the research results of other scholars in China^[33-34]. Dinner's theory of personality-environment interaction suggests that when faced with the same situation, different individuals, due to their different internal personality factors, experience varying levels of subjective well-being influenced by their environment^[35]. From this, it can be seen that when we face some uncontrollable external factors in life, we can intervene and improve our personality strengths and psychological resilience, thereby reducing the impact of life stress events on subjective well-being. Therefore, cultivating and training character strengths and psychological resilience for medical students can reduce the negative impact of life stress events, and more effectively enhance their subjective well-being.

There are still shortcomings in this study. The sample was obtained from undergraduate students at a medical university in Guangdong Province, and further verification is needed to determine whether the conclusions of this study apply to all medical students. The proportion of males in the sample is relatively small, which may result in sample bias. This study adopts a cross-sectional design and cannot draw strict causal inferences between subjective well-being and life stress events, personality traits, and psychological resilience. Future research will verify this through longitudinal or experimental studies.

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