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Negative life events and mental health of Chinese medical students: The effect of resilience, personality and social support

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ABSTRACT

The present study was conducted on a large sample of Chinese medical students to test the moderating effect of resilience between negative life events and mental health problems, and investigate the factors that affect the mental health problems of the students. The Adolescent Self-Rating Life Events Check List, Eysenck Adult Personality Questionnaire-Revised, Social Support Rating Scale, Connor-Davidson Resilience Scale, and Symptom Check List were adopted for a survey with 1,998 Chinese medical students as respondents. Mental health problems had a positive correlation with negative life events and neuroticism. On the other hand, mental health problems had a negative correlation with social support, extraversion, and resilience. Regression analysis showed that resilience moderated negative life events and mental health problems. Promoting resilience may be helpful for the adjustment of college students.

1. Introduction

Currently, mental health problems are highly prevalent among medical students (Dahlin et al., 2005; Midtgaard et al., 2008). Perceived fatigue, sleeping problems, anxiety, irritability, and depression increasingly affect medical students in the course of their study (Niemi and Vainiomaki, 2006). An eight-year study at the University of Louisville revealed that approximately 20% of their medical students sought psychiatric consultation and treatment because of adjustment problems, emotional disorders, compulsive and dependent personality disorders, and marital problems (Gordon, 1996). Compared with students in other majors, medical students have additional stress due to their longer course of study, exposure to death and dying, and the strain from working with patients. The excessive stress can lead to physical and mental health problems (Niemi and Vainiomaki, 1999), reduce self-esteem (Silver and Glicken, 1990; Kaplan and Saddock, 2000), and affect their academic achievement and personal or professional development.

Negative or stressful life events have also been associated with an increased risk of mental heath problems such as depression and anxiety (Bifulco et al., 2000; Franko et al., 2004). Margaret et al. (2003) investigated 187 college students and found that life stress was one of the predictors of mental health status. There is much empirical evidence showing that increased stress can have a detrimental impact on the academic performance and other life aspects of university students (Chow, 2007; Deroma et al., 2009).

When university students encounter negative events, personality and social support can be their protective factors (Friedlander et al., 2007). Social support is defined as the provision of psychological and material resources of a social network intended to enhance the ability of an individual to cope with stress (Ashutosh and Sharma, 2006). Elliot and Gramling (1990) pointed out that social support from family, friends, teachers, and social groups can help college students lessen psychological problems. Lack of social support is found to be related to various psychological problems such as depression, loneliness, and anxiety (Eskin, 2003). Social support is a buffer against life stressors (McCorkle et al., 2008). Previous research has shown that personality traits are associated with mental health (Clark et al., 1994; Goodwin and Friedman, 2006). Several studies have revealed that a higher level of extraversion can significantly decrease the probability of mental disorders. However, a higher level of neuroticism significantly contributes to mental disorders.

As a component of positive psychology, resilience is an indication of positive mental health. Resilience is broadly defined as the capacity of individuals exposed to a negative event to remain healthy (Bonanno, 2004) and to cope flexibly with challenges of life (Brenda, 2007). Resilient people are typically characterized by optimism, positive coping, and hardiness, and these characteristics are associated with better physical and mental health outcomes (Connor and Davidson, 2003) and more positive adaptive behaviors to negative life events. Compared with young adults with low levels of resilience, those with high levels of resilience are less likely to

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have mental health problems, interpersonal conflicts, behavioral disorders, and poor academic performance (Rew et al., 2001). Roy et al. (2011) suggested a possible role for resilience as a protective factor mitigating the risk of making a suicide attempt for an individual who has experienced childhood trauma. Nrugham et al. (2010) conducted a longitudinal study on a subset of a representative sample of 2,464 students, and revealed that resilience is a moderator of lifetime violent events and attempted suicide. Campbell-Sills et al. (2006) found that resilience can moderate the relationship between early trauma and current symptoms. Similar results are found in the study of Lewis et al. (2008) conducted on 136 information technology students.

The population, and China accordingly, is one-fifth of the world's population, which has a large number of medical students compared with other countries. However, researchers have devoted limited attention to the mental health of medical students. It is important to understand the relationships between mental health problems and other variables (e.g., personality traits and social support), and to testing the possible moderating effect of resilience between negative life events and mental health problems. Resilience enables people to thrive in the face of adversity. Improving resilience must be an important goal for treatment and prophylaxis (Dmitry et al., 2010). Negative life events may lead to mental health problems such as depression or anxiety, but an individual with a high level of resilience may cope with the difficulties more effectively and remain healthy.

Against this background, we conducted a cross-sectional study on Chinese medical students. We hypothesized that resilience moderated the relationship between negative life events and mental health problems. We also identified possible factors affecting mental health problems, with emphasis on resilience, personality traits, social support, and negative life events.

2. Methods

2.1. Subjects and procedures

A total of 2,069 students were recruited from three Chinese medical schools using mailed letters. Participants provided verbal and written informed consent to participate in the present study, which was approved by the Ethics Committee of the Third Military Medical University. The subjects completed a separate response booklet with structured, anonymous, and self-reported questionnaires. These questionnaires assessed negative life events, resilience, social support, personality, and mental health problems. The data from 71 participants were excluded from the data set because 41 students did not complete the survey and 30 students withdrew prior to the completion of the study. The remaining samples were composed of 849 males and 1,149 females, with age ranging from 18 to 26 years old (mean = 20.24, S.D. = 1.53). The response rate was 96.57%.

2.2. Measures

2.2.1. Psychological resilience

The Connor-Davidson Resilience Scale (CD-RISC) (Connor and Davidson, 2003) is a 25-item 5-point Likert-type assessment that measures the ability to cope with stress and adversity. The total scores range from 0 to 100, with higher scores reflecting greater resilience. The CD-RISC has been demonstrated to have adequate internal consistency, test-retest reliability, and convergent and divergent validity in the general population and patient samples. To improve the readability among Mainland Chinese, translations and back-translations were made by Yu and Zhang. The reliability coefficient of the Chinese version of the CD-RISC was 0.91. The internal reliability coefficients were 0.88, 0.80, and 0.60 for the three factors of Tenacity, Strength, and Optimism, respectively (Yu and Zhang, 2007).

2.2.2. Negative life events

The Adolescent Self-Rating Life Events Check List (Liu and Liu, 1997) is a 5-point Likert scale consisting of 27 items on six factors: interpersonal relationship (e.g., I had argued with my classmates), study pressure (e.g., I failed in the examination), being punished (e.g., I was criticized and punished), bereavement (e.g., A family member/close friend died), change for adaptation and others (e.g., My living habits changed). Responses are made based on a range, from 1 (not at all) to 5 (very much). The scale aims to assess whether the negative events occurred on the participant experienced the negative events as well as the effects, if any, of the stressful life events in the past year. Based on testing of 1,473 college students, the scale demonstrated good psychometric properties (the internal consistency was 0.85). At present, the scale is generally used to measure stress levels of Chinese students.

2.2.3. Personality

The Eysenck Personality Questionnaire-Revised (Gong, 1984) is an 88-item Chinese version of the scale, consisting of the following four subscales of personality: extraversion/introversion, neuroticism (stability/emotionality), psychoticism, and lying (the revelation of falsehoods) for the age range of 16–70 years old. The scale was administered to 2,517 individuals with good psychometric properties (the retest reliability values for each subscale are 0.67, 0.88, 0.80, and 0.78, respectively). The scale has been applied to people with different educational levels in China.

2.2.4. Social support

The Social Support Rating Scale (Xiao et al., 1991) is a 10-item scale that measures three dimensions: objective social support (three items), subjective social support (four items), and social support availability (three items), with higher scores reflecting more social support derived. The scale showed good psychometric properties (with internal consistency of 0.88 and a test-retest reliability of 0.85) among the general population in China.

2.2.5. Mental health problems

In the Symptom Checklist-90-Revised (Derogatis, 1983), the respondents rated the items on a 5-point scale reflecting their distress in the previous week. This 5-point Likert instrument is a multi-dimensional checklist that includes nine subscales (somatization, obsessive-compulsive behavior, interpersonal sensitivity, depression, anxiety, hostility, phobia, paranoid ideation, and psychoticism). The scale evaluated psychiatric and somatic symptoms, and achieved internal consistency coefficients ranging from 0.85 to 0.90, and test-retest correlations from 0.80 to 0.86, effectively reflecting the mental health levels of each individual.

2.3. Data analysis

Pearson correlations were computed to examine the relationships among negative life events, personality, resilience, social support, and mental health problems, the Pearson correlations were computed. Using non-centered data in regression analysis, which refers to the common practice of entering predictors in their original score format, often leads to inconsistent and misleading results. Hence, each of the variables was centered by subtracting the mean from each score (Kraemer and Blasey, 2004). Subsequently, *t* tests and one-way analysis of variance (ANOVAs) were performed, respectively, to test the differences of gender and year in medical school on the total score of resilience. SPSS 15.0 software was used for the data analyses; $P<0.05$ and $P<0.01$ were accepted as statistically significant. Hierarchical multiple regression analysis was conducted to examine the hypothesis that resilience moderates the relationship between negative life events and mental health problems. An interaction model might be regarded as a buffering model if an interaction term is observed. The magnitude of the interaction effect might be assessed by the change in R^2.

3. Results

3.1. Total score of resilience differences on gender and number of years in medical school

The total mean score of resilience was 61.69 (10.55). The scores of males and females were 64.47 (9.93) and 58.92 (10.60), respectively. Male students had higher total resilience scores than female students ($t=5.05$, $P=0.000$). There was no significant difference in the total score of resilience based on the number of years in medical school ($F=0.875(3, 1998)$, $P=0.545$).

3.2. Relationship between mental health problems and other variables

Table 1 shows the mean scores, standard deviations, and correlations among all variables. Mental health problems positively correlated with negative life events and neuroticism; in contrast, mental health problems negatively correlated with social support, extraversion, and resilience.

3.3. Regression model of all variables

A hierarchical multiple linear regression was used to analyze associations of the level of resilience with the level of negative life events and mental health problems. The resilience factors that showed salient relationships with mental health problems were first entered into the regression (step 1), followed by negative life events (step 2) and interaction effects of negative life events and resilience (step 3). The resilience score was the strongest predictor, explaining