ELSEVIER

A structural equation model of depression and the defense system factors: A survey among Chinese college students

Jue Jin [a,*], Yi-Yuan Tang [a,b,c,*,1], Yinghua Ma [a,1], Shipin Lv [a], Ying Bai [a], Hangli Zhang [a]

[a] *Institute of Neuroinformatics, Dalian University of Technology, 2 Linggong Road, Dalian 116024, PR China*
[b] *Department of Psychology, University of Oregon, Eugene, OR, USA*
[c] *Key Laboratory for Mental Health, Chinese Academy of Sciences, Beijing, PR China*

Abstract

Questionnaires were administered to a large sample of subjects (1363 Chinese college students), to evaluate the mediating risk factors in the defense system of depression, including personality, coping skills, interpersonal context and family environment. Structural equation modeling (SEM) was used to analyze a total of 12 variables in order to understand how they interact with each other. Eysenck's Neuroticism, Extraversion, and Psychoticism personality types act as the essential parts of the model, both directly and indirectly impacting depression. Coping styles are the mediators that regulate the effects of personality and family environment on depression. Family environment has only indirect effects through personality and positive coping style. Interpersonal context may not have had a significant correlation with depression, but was influenced by family environment and had a correlation with positive coping style. According to the results, therapies based on personality adjustment, family environment and coping styles of college students are greatly recommended among college students in order to lessen the chances of or to prevent depression. The present results may advance our understanding of depression etiology in young Chinese adults and provide suggestions of factors that should be taken into account in the evaluation, treatment and even the prevention of depression.
© 2008 Elsevier Ireland Ltd. All rights reserved.

Keywords: Depression; Personality; Coping styles; Family environment; Interpersonal context; College students

1. Introduction

Depression in China has been widely reported (Eddleston and Gunnell, 2006; Miller, 2006). Epidemiological data show that the prevalence of depression among young Chinese adults ranges from 3.7% to 14.8% (Shi et al., 2005; Xu et al., 2006). There is an imperative need to find practical ways to screen out depressed young adults and evaluate the mediating risk factors in the depression defense system so that effective intervention may be implemented and mental health outcome among such subjects may be improved. As depression is a prototypic multifactorial disorder that is profoundly affected by many potential causes, it is unlikely that any single etiological framework (e.g. personality, cognitive, familial context, interpersonal relationship) will provide a necessary and sufficient

---

* Corresponding author. Institute of Informatics, Dalian University of Technology, 2 Ling Gong Road, Dalian 116023, PR China. Fax: +86 411 84706046.

E-mail addresses: chelseann@gmail.com (J. Jin), yy2100@126.com (Y.-Y. Tang).

[1] Marks equal contribution.

causal explanation for the development of depression (Hankin, 2006). Instead, many processes, mechanisms, and risk factors need to be evaluated simultaneously to provide a more complete understanding of the susceptibility to depression among young adults. This study is the first attempt to survey four perspectives from the defense system factors of depression, including the personality traits, coping styles, interpersonal context, and familial environment, in order to provide a more holistic understanding of how these factors interact and impact depression among young adults, so thereby an intervention strategy may be built on these results.

A vulnerability–stress framework suggested that acute stressful life events and chronic stressful circumstances trigger an underlying predisposition, which may be one of the most promising explanations for how a depressive episode develops (Hankin and Abela, 2005). Nevertheless, because not all individuals who experience stressful life events will suffer from depression, a defense system serves the function to prevent the disease. Firstly, some individual characters (called diatheses) contribute to the foundational differences (Monroe and Simons, 1991) in the system. Of the personal diatheses, temperament (or personality traits) plays a significant role in this framework. Three higher order temperaments have been consistently linked with depression: positive emotionality, negative emotionality, and constraint–attentional control. Positive emotionality refers to the extent to which an individual is receptive to reward, sociable, sensation seeking, and actively involved with his or her environment; while negative emotionality involves a tendency toward discomfort, fear, anger, sadness, and low soothability (Derryberry and Rothbart, 1988; Compas et al., 2004). According to Clark and Watson's (1991) tripartite model, negative emotionality is a nonspecific factor, increasing the risk for both depression and anxiety. Positive emotionality is a specific character, which only negatively affects depression and protects against depressive symptoms such as anhedonia. The dimensions of these two personality traits are largely independent (Clark and Watson, 1991; Clark et al., 1994; Compas et al., 2004; Lonigan et al., 2004), which is strongly supported by the findings of Chorpita (2002) in adolescents. The concept of the third trait of constraint–attentional control remains broad, involving effortful control of emotions and behaviors, self-regulation, task persistence, and attentional focus, all of which can modulate the expression of positive and negative emotionality (Compas et al., 2004). Eysenck proposed a personality theory based on three biological temperament traits: extraversion, neuroticism and psychoticism. In his theory, extraversion

(E) is characterized by being outgoing, talkative, high on positive affect, and in need of external stimulation, which reflects positive emotionality. Neuroticism (N) is characterized by high levels of negative affect with low activation thresholds and easy upsets, which conceptually reflects negative emotionality. Psychoticism (P) is characterized by tough-mindedness, nonconformity, hostility, and impulsivity, embracing the concept of the constraint–attentional control temperament. (Acton, 2003). We used the Eysenck Personality Questionnaire, which has been well established in China and has a reliable Chinese version, and hypothesized that all of the three personality traits have direct effects on depression. Both E and N are also mediated by P.

Another diathesis between stressful events and depression is the coping style, which also receives great attention in explorations of the risk factors of depression. The term "coping styles" is broadly defined as the individual's emotional, cognitive and behavioral efforts to moderate the impact of stressful events on his or her physical, social, and emotional functioning (Nakano, 1991; Beutler et al., 2003). Previous studies suggest that the coping styles predict depression (Nakano, 1991), independent of personality traits and regulating them (Tyssen and Vaglum, 2002). The coping styles are divided into several factors. Moreover, Jiang (1999) grouped the coping style factors into two categories, that have been used to measure Chinese people's coping skills. In terms of this method, negative coping styles, associated with increased psychological symptoms, mediate neuroticism; positive coping styles, including the concept of active coping, distraction, and support seeking, are generally associated with decreased symptoms and mediate extraversion and psychoticism (Rothbart et al., 1995; Beutler et al., 2003; Muris et al., 2003; Compas et al., 2004; Liu et al., 2004). Research has also indicated that the positive coping styles have a correlation with the interpersonal context (Schwartz et al., 2000; Tyssen and Vaglum, 2002) and mediate family environment (Tyssen and Vaglum, 2002).

Furthermore, aside from the diatheses mentioned above, interpersonal context, which is another mediating factor in the defense system of depression, should also be included. The interpersonal context mentioned here comprises both the interpersonal relationship status and the interpersonal skills, relating to social support and social functioning. From this framework, several studies illustrate that the relationship between interpersonal context and depression is ambiguous. On the one hand, interpersonal problems can precede depressive episodes, and are viewed as a kind of interpersonal stressor to depression (Schwartz et al., 2000; Sakai et al., 2005). On