Direct and indirect relationship between locus of control and depression

Xiaobo Yu1 and Guanhua Fan2

Abstract
This study examined the mediating effect of self-esteem on the relationship between locus of control and depression among Chinese university students. In all, 457 students (232 men and 225 women) completed measures of locus of control, self-esteem, and depression. Correlational analyses indicated that external locus of control was related to self-esteem and depression, and self-esteem was related to depression. Structural equation modeling analysis showed that self-esteem partially mediated the influence of locus of control on depression. The significance of the results is discussed.

Keywords
depression, direct and indirect relationship, locus of control, self-esteem

Introduction
Locus of control was proposed by Rotter, who defined it as an individual’s generalized expectancy in terms of the relation between behavior and result, that is, whether an event’s result is determined by an individual’s general belief; locus of control is generally divided into internal and external locus of control (Rotter, 1954). In internal locus of control, individuals consider that they can control problems and events in their life; in external locus of control, individuals consider that their problems and events in life are controlled by external factors, such as powerful people, opportunity, and destiny (Zampieri and de Souza, 2011). Several studies and discussions have been conducted on Rotter’s concept of locus of control since its proposal. For example, Bialer (1961) investigated whether internal or external factor controls an individual’s success and failure. Rotter (1975) believed that causes and effects formed by individuals in real-life situations are abstracted and summarized, thereby creating differences in personal traits in terms of sense of control.

Depression is a common negative emotion that passively influences an individual’s work, learning, and life (Hu and Ai, 2014; Tully and Cosh, 2013; Yackobovitch-Gavan et al., 2014). Severe depression likely harms an individual’s

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emotions and motives, even leading to suicide (Bianchi et al., 2013). Several studies have been conducted on the relation between the locus of control tendency and the level of depression. For example, Seligman stated that the event is under an individual’s control if his or her behavior can affect an event’s result, thereby leading to a deficiency in motive, emotion, and cognition if the sense of control is lost; this loss in sense of control can result in learned helplessness and depression (Seligman, 1972). Benassi et al. (1988) retrospectively analyzed 97 study reports related to the relation between the locus of control and depression and found that the average correlation coefficient of the locus of control and depression is 0.31. Benassi et al. (1988) also found that the external locus of control is positively correlated with depression.

Few studies have focused on determining why locus of control can predict depression. Studies have focused on the vulnerable diatheses of depression, and various vulnerability models have been proposed. For instance, according to the self-esteem theory of depression, low self-esteem is one of the most important vulnerable diatheses of depression (Milevsky et al., 2007; Orth and Robins, 2013). After performing a meta-analysis of the association between self-esteem and depression, Sowislo and Orth (2013) found that self-esteem elicits a stronger predictive effect on depression than depression on self-esteem.

Previous studies focused mainly on the pairwise relations between locus of control, depression, and self-esteem, but the relationships between these three factors in combination rarely has been explored. Considering depression, many researchers studied how to prevent depression by utilizing locus of control and enhancing the level of self-esteem; however, only few researchers have studied the mutual effects of the locus of control and self-esteem. We hypothesized that both locus of control and self-esteem have significant impacts on depression, and self-esteem mediates the effect of locus of control on depression.

**Methods**

**Participants**

Participants were 457 students from a general university in Shanghai, China, which consisted of 232 men and 225 women. The ages of participants ranged from 18 to 21 years, with a mean of 19.86 years (standard deviation (SD) = 1.53). Participants completed the questionnaires in a classroom environment and received a pen as compensation. From the 457 scales that were distributed and collected, 2 unfinished scales were excluded. All participants provided their written informed consent before completing the measures.

**Measures**

**The Nowicki–Strickland Internal–External Locus of Control Scale.** The Nowicki–Strickland Internal–External Scale is a widely used measure of locus of control (Nowicki and Duke, 1974). This scale contains 40 items answered with a “yes” or “no,” and higher scores reflect more external orientations. Some examples of items include “Are some people just born lucky?” and “Most of the time, do you find it useless to try to get your own way at home?” The scale has reported split-half reliability figures ranging from 0.74 to 0.86, with test–retest reliability figures ranging from 0.63 to 0.76 (Wehmeyer et al., 1996). The Nowicki–Strickland Internal–External Locus of Control Scale was translated into Chinese by Liu et al. (2000) and has been proved to have good validity and reliability in Chinese populations (Gan et al., 2007). The Cronbach alpha coefficient for the Adult Nowicki–Strickland Internal–External Locus of Control Scale was 0.74 in our study.

**Rosenberg Self-Esteem Scale.** The Rosenberg Self-Esteem Scale (RSES) consists of 10 self-esteem-related items such as, “On the whole I am satisfied with myself” and “All in all, I am inclined to feel that I am a failure” (Lumei, 2006). Each item is rated on a 7-point Likert scale, ranging between 1 (strongly disagree)
and 7 (strongly agree). The RSES score is the sum of items with reverse coding of relevant items. The RSES was translated into Chinese and was proved to have good reliability and validity (Cheung and Lau, 1985). The Cronbach alpha coefficient of the scale is 0.813.

Self-rating Depression Scale. Self-rating Depression Scale (SDS) is a self-report measure of depression consisting of 20 items, with a 4-point scale ranging from 1 (a little of the time) to 4 (most of the time) (Zung, 1986). Of the 20 items, 10 are worded positively and 10 are worded negatively. The validity and the reliability of the Chinese version of the SDS have been reported (Knight et al., 1983). In this study, the Cronbach alpha coefficient for SDS was 0.804.

Data analysis

First, the intercorrelations of all the latent variables were calculated to test the significance of correlation coefficient. Then, a two-step procedure introduced by Anderson and Gerbing (1988) was adapted to analyze the mediation effect in order to confirm the structural relations of the latent structured model. Finally, the measurement model of the four latent variables was tested to assess the extent of goodness of fit represented by its indicators. If the index of the confirmatory measurement model met the requirements, then the maximum likelihood estimation would be used to test the standard error of the mean (SEM). All the above analyses were conducted using the Amos 17.0 program.

Results

Descriptive statistics and correlation analysis

Means, SDs, and intercorrelations for all the variables are presented in Table 1. The results showed that external locus of control was positively correlated with self-esteem ($r=0.30$, $p<0.01$) and negatively correlated with depression ($r=-0.35$, $p<0.01$). In addition, self-esteem was negatively correlated with depression ($r=-0.67$, $p<0.01$).

Measurement model

Confirmatory factor analysis (CFA) was used to assess whether the measurement model fit the sample data adequately or not. The initial test of the measurement model produced a satisfactory fit to the data: $\chi^2$ ($df=3$) = 8.43, $\chi^2/df=2.81$, $p<0.001$; RMSEA=0.063; SRMR=0.027; and CFI=0.994. All the factor loadings for the indicators on the latent variables were significant ($p<0.001$), indicating that all the latent constructs were well represented by their indicators.

Structural model

SEM was used to analyze the mediation effect. The results showed that the model showed an acceptable fit to the data: $\chi^2$ ($df=7$) = 24.25, $\chi^2/df=3.46$, $p=0.001$; RMSEA=0.074; SRMR=0.029; and CFI=0.983. The final model is shown in Figure 1. Taken together, these results showed that the external locus of control

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>External locus of control</td>
<td>17.36</td>
<td>4.89</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-esteem</td>
<td>32.61</td>
<td>3.72</td>
<td>0.30**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>66.68</td>
<td>7.52</td>
<td>-0.35**</td>
<td>-0.67**</td>
<td>1</td>
</tr>
</tbody>
</table>

SD: standard deviation.
** $p<0.01$
control and self-esteem are significantly related to depression scores.

**Confidence interval of direct and indirect effects**

The mediating effects of self-esteem between external locus of control and depression were tested for a significance using the Bootstrap estimation procedure in Amos (a bootstrap sample of 1000 was specified). The reason for not using the Sobel test, the commonly employed method for examining the statistical significance of a mediation effect, is that the Sobel test requires the products of direct effects to follow a normal distribution, which is not always the case, thus resulting in a reduction in statistical efficacy. However, the bootstrap test relies on the 95 percent confidence intervals from the empirical distribution of indirect effect estimates and, as suggested by MacKinnon et al. (2002), the bootstrap method yields the most accurate confidence intervals for indirect effects (He et al., 2013; Zhang et al., 2013). As shown in Table 2, the indirect effect of external locus of control on depression through self-esteem was significant. The effect of external locus of control on depression through self-esteem was 14.14% \((-0.042/(−0.042–0.255))\).

**Table 2.** Direct and indirect effects and 95 percent CIs for the final model.

<table>
<thead>
<tr>
<th>Model pathways</th>
<th>Estimated effect</th>
<th>95% CI Lower bounds</th>
<th>95% CI Upper bounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct effect</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>External locus of control → depression</td>
<td>-0.255</td>
<td>-0.367</td>
<td>-0.144</td>
</tr>
<tr>
<td>External locus of control → self-esteem</td>
<td>0.242</td>
<td>0.118</td>
<td>0.367</td>
</tr>
<tr>
<td>Self-esteem → depression</td>
<td>-0.448</td>
<td>-0.580</td>
<td>-0.305</td>
</tr>
<tr>
<td>Indirect effect</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>External locus of control → self-esteem → depression</td>
<td>-0.042</td>
<td>-0.180</td>
<td>-0.047</td>
</tr>
</tbody>
</table>

CI: confidence interval.

**Discussion**

This research found that the relationship of locus of control, self-esteem, and depression was significant. Depression was positively correlated with external control, indicating that an individual with a high external locus of control hardly experiences depression. However, an individual who attributes his or her failure to take control of opportunities is more likely to develop depression. If an individual depends on powerful others, this individual also easily experiences depression. These findings are consistent with those of previous studies (Benassi et al., 1988; Zampieri and de Souza, 2011). Self-esteem is negatively correlated with depression, indicating that an individual with a high self-evaluation has a less likelihood of developing depression. External locus of control is negatively correlated with self-esteem, indicating that an individual with internal high sense of control more likely experiences negative self-evaluation.

SEM analysis indicated that self-esteem exhibits a partial mediating effect between locus of control and depression. Individuals with a higher sense of control generally experience higher self-esteem and believe they can achieve their expectations in future events; thus, these individuals develop high self-esteem and low level of depression (Mearns et al., 2013). We suggest that the locus of control may be a direct or indirect factor that affects an individual’s depression tendency. Individuals believe that they can control depressed emotions that
occasionally occur and positively cope with negative emotions because their internal locus of control has a more stable generalized expectancy of the internal locus of control for life events. Some other individuals consider that events in life are controlled by opportunities and destiny.

Several novel results discovered in this study have practical implications. The study demonstrated that locus of control directly affects not only an individual’s emotional state but also an individual’s mental health through self-esteem. With internal locus of control, individuals consider that their behaviors can control the expected results of future events, allowing them to develop high self-esteem and improve mental health (Ross and Mirowsky, 2013). If low self-esteem of an individual is caused by lack of experience, skill, and ability, a more severe depression may be experienced when the behavior’s result is not of the expectancy that they can control (Mearns et al., 2013). Self-esteem is closely related to students’ scholastic achievement and mental health, as are subjective well-being and achievement after students enter society (Lambourne et al., 2013; Sowislo and Orth, 2013).

The study concluded that external locus of control could promote self-esteem, which in turn leads to a significant reduction in depression. Despite these findings, this study has limitations. First, the study’s correlational cross-sectional nature prohibits the drawing of any causal relationships among the variables. Future longitudinal or experimental studies should be conducted to facilitate more causal evaluations. Second, self-esteem was the only potential mediator that was examined despite the presence of other mediators that are capable of playing an important role in the relationship between locus of control and depression. Thus, other variables, such as coping style, should be examined in the future studies.

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References


