

A CAUSAL MODEL OF HOPELESSNESS DEPRESSION IN CHINESE UNDERGRADUATE STUDENTS

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The diathesis-stress component hypothesis and the mediational role of hopelessness proposed by the hopelessness theory of depression were tested using data from a 16-week longitudinal study of Chinese university undergraduates. Participants ($N = 240$) completed self-report measures assessing attributional style, negative life events, hopelessness, and hopelessness depression symptoms at 3 time points. The diathesis-stress hypothesis was tested using the latent growth curve model and results showed that as postulated in the hopelessness theory, depressogenic attributional style predicted hopelessness depression following the occurrence of negative life events. Specifically, hopelessness played a partial mediating role in the etiological chain of hopelessness depression.

Keywords: attributional style, hopelessness, mediation, hopelessness depression, latent growth curve model.

Hopelessness theory is a diathesis-stress theory of depression that posits a series of contributory causes that interact with one another to culminate in a specific subtype of depression, that is, hopelessness depression (Abramson, Metalsky, & Alloy, 1989). According to the theory's attributional vulnerability hypothesis, a depressogenic attributional style (i.e., the tendency to view the causes of negative events as global and stable) serves as a cognitive vulnerability factor leading to hopelessness depression. The hopelessness theory consists of the diathesis-stress and causal mediation components. In the former component it is postulated

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that individuals who exhibit a depressogenic attributional style (diathesis) are more likely than those who do not, to ascribe any particular negative event they experience (stress) to a stable and global cause, thereby increasing the probability of becoming hopeless and then developing the symptoms of hopelessness depression. However, in the absence of negative events, people exhibiting a depressogenic attributional style should be no more likely to become depressed than people who do not possess this style. Thus, a depressogenic attributional style is a vulnerability factor giving rise to the development of symptoms of hopelessness depression by interacting with negative life events. Empirical evidence generally supports the diathesis-stress component (e.g., Abela, Aydin, & Auerbach, 2006; Gibb, Beevers, Andover, & Holleran, 2006; Hankin, Abramson, Miller, & Haeffel, 2004). In the causal mediation component it is posited that hopelessness mediates between the diathesis-stress component and hopelessness depression symptoms in the etiological chain. Available evidence is inconsistent, with some researchers providing full or partial support for this hypothesis (e.g., Hong, Gwee, & Karia, 2006) and others showing no support (e.g., Abela, 2001; Stone, Gibb, & Coles, 2010)

Although much is known about the diathesis-stress component, only a few studies of the hopelessness theory have been carried out with undergraduate samples in China (e.g., Wang & Zhang, 2006; Xin, Ma, & Geng, 2006). Despite the strengths of these Chinese studies, Gibb and colleagues (2006) found some common limitations. Firstly, in these studies depression symptoms in Chinese undergraduates were assessed using the Beck Depression Inventory (BDI; Beck & Steer, 1987) and the BDI does not include all symptoms of hopelessness in the inventory. Secondly, only one or two links in the etiological chain of the hopelessness theory were tested separately while considering their possible causal relationships. Thirdly, in the majority only two assessment points were used and typically negative life events were assessed at the end of the study, using this measurement to predict changes in depression symptoms over the follow-up. The test of the diathesis-stress hypothesis in these studies was primarily carried out using path analysis and hierarchical multiple regression analysis, the latter of which takes a nomothetic approach. More recent analytic strategies for analyzing longitudinal data such as latent growth curve modeling (LGM) and hierarchical linear modeling (HLM) provide more powerful tests of the hopelessness theory diathesis-stress hypothesis because they allow for simultaneous analysis of idiographic variations in the levels of, and relationships between, negative life events and depressive symptoms as well as nomothetic effects of attributional style on this relationship.

The major goal in this study was to provide a longitudinal test of the hopelessness theory diathesis-stress hypothesis. Specifically, we utilized a prospective multiwave design in which we assessed depressogenic attributional style, levels

of negative life events, hopelessness, and symptoms of hopelessness depression at the initial assessment and then at two follow-up assessments, occurring at 8 weeks and 16 weeks, respectively. We tested whether depressogenic attributional style could be used to predict increases in depressive symptoms in individuals experiencing a high level of negative life events. We also tested the mediator effect of hopelessness in the depression generating process in hopelessness theory.

Method

Participants and Procedures

Participants were 269 undergraduates selected using stratified random sampling from a large university in China, and comprised 75 freshman, 65 sophomore, 65 junior, and 64 senior students. The initial sample was reduced by 29 participants owing to incomplete data, leaving a final sample of 240 participants (113 females and 127 males). Participants' ages ranged from 18 to 22 with a mean of 20.35 years ($SD = 1.03$). During Phase 1, participants completed the consent forms and four questionnaires that were administered in versions of each that had been adapted into Chinese and had previously been widely used in the Chinese context (see e.g., Wang & Zhang, 2008; Yi & Feng, 2008). Phase 2 and Phase 3 occurred at 8 weeks and 16 weeks, respectively, during which participants completed the first, third, and fourth questionnaires described below.

Measures

Beck Hopelessness Scale (BHS; Beck, Weissman, Lester, & Trexler, 1974). Participants reported feelings of hopelessness for the last 2 weeks on the 20-item BHS using a true-false format. Examples of items include "It is very unlikely that I will get any real satisfaction in the future". Beck et al. reported an internal consistency of .93 and a correlation of .74 with clinician ratings of hopelessness, and suggested that the BHS was sensitive to changes in patients' hopelessness over time. We obtained an internal consistency of .78.

Attributional Style Questionnaire (ASQ; Peterson et al., 1982). The ASQ consists of a total of 12 hypothetical events (six negative and six positive). Participants are asked to write down the major cause for each event. They then rate each cause on a 1-7 scale for each of the following dimensions: internality, globality, and stability. The higher the scores are on these dimensions, the more internal, global, and stable the attributional style. To be consistent with hopelessness theory, we used the six negative events to test our hypotheses. Higher scores correspond to more depressogenic attributional styles. We obtained an internal consistency of .84.

Adolescent Self-Rating Life Events Checklist (ASLEC; Liu, Liu, Yang, & Zhao, 1997). This scale consists of a list of 27 hassles and negative life events. Participants rate each item on how often it was a hassle for them in the past 2 weeks on a 5-point scale ranging from 1 (*never*) to 5 (*all the time*). Total hassles scores were obtained by summing across the ratings given to all items, with higher scores indicating more hassles and negative life events. The ASLEC exhibited an excellent internal consistency score of .85.

Hopelessness Depression Symptom Questionnaire (HDSQ; Metalsky & Joiner, 1997). The HDSQ is a 32-item self-report measure of individual and combined symptoms of hopelessness depression. Each symptom is measured by a cluster of four items (e.g., for psychomotor retardation, motivational deficit). There are eight subscales, each comprising four items and measuring a different symptom of hopelessness depression. Scores on each item range from 0 to 3 and, for a given subscale, from 0 to 12, with higher scores reflecting greater severity of a given symptom. We obtained an internal consistency of .87.

Results

We conducted multivariate analyses of variance (MANOVAs) for each variable to examine the growth of hopelessness, hopelessness depression, and negative life events. Because the within-subject factors failed to meet the assumption of Mauchly's test of sphericity, we used the Huynh-Feldt correction factor (Liu & Zhang, 2005), and found that there was a significant difference in depressive symptoms over the three phases ($F(1.958, 467.853) = 28.004, p < .05$), and in negative life events over the three phases ($F(1.902, 454.634) = 12.724, p < .05$), which reflected a significant decrease of depressive symptoms and negative life events. As there was an insignificant difference in hopelessness over the three times, we fixed the mean of hopelessness as a variable when constructing the following LGM (Liu & Meng, 2003).

We tested the diathesis-stress hypothesis using LGM because it provides a means of modeling a developmental function as a factor of repeated observations over time. An important facet of multivariate LGMs, and an advantage over repeated measures polynomial analysis of variance techniques, is that they enable associations to be made among the individual differences parameters. These associations are analogous to the synchronous structural equation model's correlation coefficient (Meredith & Tisak, 1990), and are crucial to any investigation of development because they are an indicant of the influences of development, and thus, are correlates of change.

The hypothesized model was tested using AMOS version 4.0 and contained a linear growth curve concerned with the change in negative life events and a linear growth curve concerned with the change in depressive symptoms to

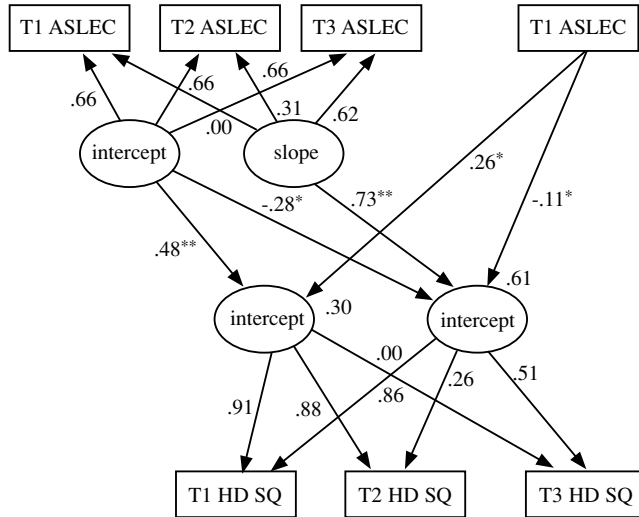


Figure 1. *The diathesis-stress component model of the hopelessness theory of depression.*
 Note: Error terms are omitted for clarity. χ^2 (12, $N = 240$) = 28.88, $p = .01$, goodness of fit index = .964, normed fit index = .992, comparative fit index = .995, root mean square error of approximation = .077. * $p < .05$, ** $p < .01$.

test the relationships between negative life events, depressogenic attributional style, and depressive symptoms. Each linear growth curve is characterized by two variables: a variable for the growth at the first time point labeled *intercept*, representing the participants' baseline level and initial status, and a variable for changes in the curve over time labeled *slope* representing linear change over time. The coefficients for the intercept latent variables are fixed at 1 because the intercept is acting as a constant for the linear growth and contributes the same value at every time point. The coefficients for the slope latent variables can be fixed according to the timing of the assessment points beginning with 0 for the initial measurement and ending with 2. Figure 1 represents the diathesis-stress component model of the hopelessness theory. A number of fit indices were used to investigate whether the model fitted the observed data. Hu and Bentler (1999) and Wen, Hau, and Marsh (2004) recommended cutoff criteria for fit indices commonly used in structural equation modeling and path analysis. The linear growth model fitted the data adequately, χ^2 (12, $N = 240$) = 28.88, $p = .01$, GFI = .964, NFI = .992, CFI = .995, RMSEA = .077. As can be seen in Figure 1, the initial status of negative life events predicted a positive influence on the intercept of hopelessness depression ($\beta = -.28$). The linear slope of negative life events positively predicted the slope of hopelessness depression ($\beta = .73$). Depressogenic

attributional style positively predicted the intercept of hopelessness depression ($\beta = .26$). The intercept of negative life events and depressogenic attributional style combined accounted for 30.3% of the intercept of hopelessness depression. Depressogenic attributional style and the intercept and slope of negative life events accounted for 60.6% of the slope of hopelessness depression.

To construct the mediator model of hopelessness, we added the variable of mean hopelessness to the diathesis-stress model of hopelessness depression, because there was an insignificant difference in hopelessness over the three times and it remained stable during that period. The hypothesized model depicted a partial mediator effect of hopelessness (shown in Figure 2), in agreement with some researchers (e.g., Hong et al., 2006; Johnson et al., 2001) who have supported hopelessness as a partial mediator between the diathesis-stress component and hopelessness depression symptoms.

In Figure 2, all paths in the complementary hypothesized model were significant except for the path from depressogenic attributional style to the slope

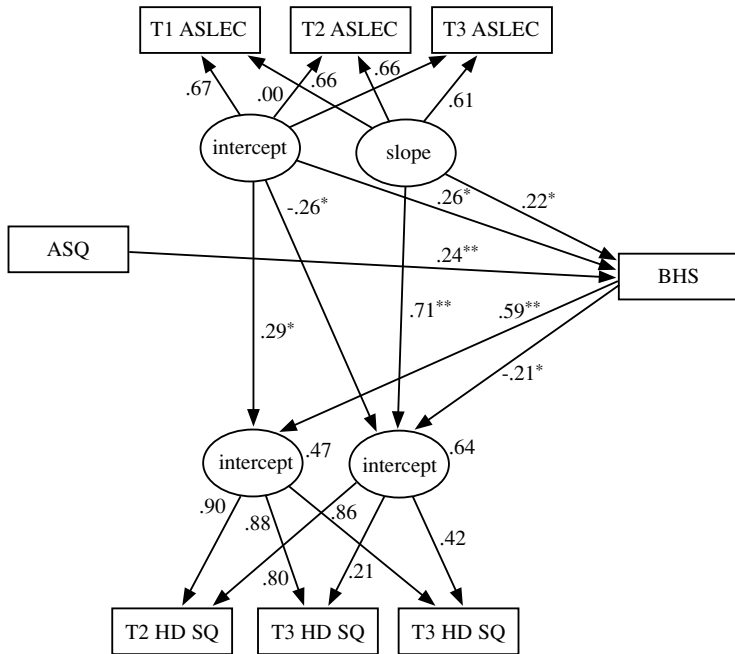


Figure 2. The final mediator model of hopelessness theory of depression.

Note: Error terms are omitted for clarity. $\chi^2 (15, N = 240) = 47.88, p = .01$, goodness of fit index = .959, normed fit index = .951, comparative fit index = .975, root mean square error of approximation = .078. * $p < .05$, ** $p < .01$.

of hopelessness depression and the path from depressogenic attributional style to the intercept of hopelessness depression. The alternative models were then compared against the complementary hypothesized model. We modified the model according to path coefficients and modification indices, developed nested models, and represented the data in a more parsimonious form. As shown in Table 1, in comparison to M1 and M2, M3 was the preferred model, $\Delta\chi^2(1, N = 240) = 3.942, p = .01$. The results of direct effect and indirect effect analyses are shown in Figure 2 and Table 2.

Table 1. *Model Fit Indices and Model Comparisons*

Model	χ^2	<i>df</i>	Model comparison	$\Delta\chi^2$	Δdf	GFI	NFI	CFI	RMSEA
M1 ^a	40.347	13	-	-	-	.962	.956	.959	.084
M2 ^b	43.942	14	M1 versus M2	3.595	1	.962	.955	.969	.080
M3 ^c	47.884	15	M2 versus M3	3.942	1	.959	.951	.975	.078

Note: GFI = goodness of fit index; NFI = normed fit index; CFI = comparative fit index; RMSEA = root mean square error of approximation.

^a M1: The complementary hypothesized mediator model of the hopelessness theory of depression.

^b M2: In comparison with M1, the path from depressogenic attributional style to slope of hopelessness depression was omitted.

^c M3: In comparison with M2, the path from depressogenic attributional style to intercept of hopelessness depression was omitted.

Table 2. *Direct Effect, Indirect Effect, and Total Effect of Variables*

Variable	Direct effect	Indirect effect	Total effect	<i>R</i> ²
Intercept of hopelessness depression				.471
Depressogenic attributional style		.143	.143	
Intercept of negative life events	.289	.151	.440	
Slope of negative life events		.131	.131	
Hopelessness	.592		.592	
Slope of hopelessness depression				.637
Depressogenic attributional style		-.052	-.052	
Intercept of negative life events	-.256	-.055	-.310	
Slope of negative life events	.711	-.048	.663	
Hopelessness	-.215		-.215	

Discussion

We tested the etiological process of hopelessness depression, and whether changes in hopelessness mediate the relationship between the diathesis-stress component and subsequent changes in hopelessness depression symptoms. The findings provide partial support for the specific diathesis-stress component hypothesis of the hopelessness theory (Abramson et al., 1989) and are consistent

with the findings of Joiner and Wagner (1995), Joiner (2001), Abela et al. (2006), and Monroe et al. (2006) that depressogenic attributional style predicts hopelessness depression following the occurrence of negative life events. Furthermore, the rate of change in negative life events (slope) positively predicted the rate of changes in depressive symptoms (slope). We also found depressogenic attributional style and the baseline of negative life events (intercept) to be negatively related to the rate of changes of hopelessness depression (slope). More specifically, individuals with depressogenic attributional style following an initial high level of negative life events experienced a slower decrease in hopelessness depression. A probable reason is that individuals with depressogenic attributional style following the occurrence of negative life events are more inclined to attribute negative events to global and stable causes and perceive negative events as producing many inevitable and disastrous consequences. Therefore, hopelessness depression symptoms tend to be more enduring and even unchangeable over time. Further research is needed to examine the likelihood of hopelessness depression changing following more negative life events.

The findings also provide partial support for the mediational role of hopelessness proposed by hopelessness theory. More specifically, hopelessness played a partial mediating role between the diathesis-stress component and onset of hopelessness depression symptoms (intercept). This is consistent with the findings of Abela (2002) and Hong et al. (2006) that hopelessness is a proximal sufficient cause of hopeless depression, that is, the onset of hopelessness depression is likely to occur and persist over time following the experience of hopelessness. However unlike Hong et al. (2006), we found that hopelessness did not significantly mediate between negative life events, attributional style, and the rate of change in hopelessness depression (slope). Furthermore, this study was one of the first in which a high level of hopelessness was found to predict the onset of a high level of, and slower decrease, in hopelessness depression. A possible reason is that hopelessness involves a negative outcome expectancy, giving rise to the feeling that hopes have been destroyed, or of facing a dilemma that cannot be resolved. It is a subjective emotion with a negative viewpoint, that is, losing control, confidence, courage, and the energy to reach one's goal. Once hopelessness develops, an individual will have feelings of helplessness and worthlessness, and experience sadness, psychomotor retardation, and even suicidal ideation (Pan & Qiu, 2004). Thus, individuals with serious hopelessness exhibit social withdrawal, react slowly to their external environment, and therefore exhibit relatively enduring hopelessness depression symptoms.

In summary, the findings in the present study add to an emerging body of research that has put the hopelessness theory of depression through stringent empirical testing. The findings that depressogenic attributional style predicts the onset of hopelessness depression following the occurrence of negative life

events, and that hopelessness plays a partial mediational role in the etiological chain, represent partial support for the hopelessness theory.

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