

Cognitive Vulnerability and International Student Stress:

A Test of the Diathesis-Stress Model of Depression in International Students in Spain

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Abstract

International students face unique life stressors that put them at an increased risk for exhibiting depressive symptoms while they are in college. Due to a changing economy, Spain has seen a large recent increase in international students. Along with stress, cognitive style (i.e., the way a person thinks about the world) has been established as a risk factor for the development of depressive symptoms. In line with diathesis stress models of depression, the purpose of this study was to examine international student stress, cognitive style, and the interaction of these risk factors as predictors of depressive symptoms in international students in Spain. Four brief questionnaires were administered to 163 international students in Spain. Both cognitive style and stress were significant predictors of concurrent depressive symptoms, but the interaction of these predictors was not statistically significant. Directions for future research identifying risks for depressive symptoms in the growing population of international students in Spain are discussed.

A Test of the Diathesis-Stress Model of Depression in International Students in Spain

Depression is a major problem faced by many college students today. Students with depression can have significant impairments in many areas of functioning, including social, academic, and occupational (Field et al., 2012). The prevalence of depression has been shown to be higher in college-aged students than in the general population, with around 30% of college-aged students at any given time with depression and around only 9% in the general population (Ibrahim et al., 2012).

International college students in particular tend to face unique life challenges that can put them at an even greater risk for developing symptoms of depression (Yakunina et al., 2013). These challenges include things like a language barrier, lack of understanding of a culture, and difficulty with seeking academic assistance, and have been well documented in the literature (Olivas & Li, 2006). Spain has seen a very large recent increase in international students, which represents a largely understudied and vulnerable population (OECD, 2010).

Diathesis-stress models of depression

Diathesis-stress models of depression suggest that the combination of pre-existing diatheses (such as a negative cognitive style) and stressors together predict the development of depression. The model suggests that individuals who think of themselves or the world in a more negative style will be more susceptible to exhibiting symptoms of depression when faced with significant life stress. The idea that people have differences in cognition and the way they think about the world that makes them vulnerable to depression helps account for differences in how people react to similar stressful situations (Slavik & Croake, 2006).

There are a number of theories and models that might inform a diathesis-stress approach to depression. One example is Beck's Cognitive Triad Model, which claims that negative views about the world, the future, and the self precede and contribute to the development of depression. These views affect the way in which information is processed, thus making these individuals vulnerable to developing mental health issues when negative life situations arise (1967).

A second important model that could inform diathesis-stress approaches to depression is the reformulated Learned Helplessness Model, which suggests that feeling helpless leads to depression. This is especially true when the feeling of helplessness is applied to all situations in a person's life, such as when people take a negative situation and assume that they are helpless to achieve desirable outcomes in other general aspects of their lives (Miller & Seligman, 1982). Both of these models are dependent on the idea that a stressful life event occurs for the individual. Thus, maladaptive cognitive style and stress are posited to work together in contributing to the development of depression. Therefore, a person with a negative cognitive style may never develop depression simply because that person never encountered a particularly stressful event (Slavik & Croake, 2006).

Each of the two predictors, stress and cognitive vulnerability, are known to increase the likelihood of depression on their own as well. Stress alone is a predictor of depression in a variety of populations (Monroe, 2008). In fact, around 50-80% of people with depression faced a new major life stressor prior to the onset of depression. However, the opposite is not true. That is, those who face major life stress do not generally develop depression (Monroe & Reid, 2009). This suggests that, while stress certainly plays a role in

the development of depressive symptoms, other factors are at play in predicting depression.

Examining cognitive vulnerability, Alloy and colleagues (2006) found that negative inferential style and dysfunctional attitudes predicted subsequent development of depressive symptoms. That is, thinking in negative ways appeared to serve as risk factors for depression. More specifically, in a study of 347 college students, Alloy et al. (2006) found individuals with high-risk attributional styles, or negative ways of thinking, were almost seven times more likely to develop major depression over a period of 2.5 years than were those with low-risk attributional styles and positive ways of thinking. Cognitive high-risk was defined as scoring in the highest quartile on both the Dysfunctional Attitudes Scale (DAS) and Cognitive Style Questionnaire (CSQ), and those that scored in the lowest quartile on those two scales were defined as having cognitive low-risk. Those with cognitive high-risk, compared to those with cognitive low-risk, were three and a half times more likely to develop minor depression. The study also found that there was a greater likelihood of past depressive disorders and symptoms demonstrated in individuals with negative attributional styles (Alloy et al., 2006).

A major challenge in studying attributional styles across cultures is the lack of research outside of the United States that exists on this topic. One difference between most Western cultures and non-Western cultures is the value of individualism or collectivism. Collectivism, found in most Asian cultures, indicates a group identity, rather than individual, in everyday events because all people are seen as interdependent. In Western cultures, on the other hand, a person is considered to be independent, thus being in charge of his or her own future and at fault for his or her own mistakes. Therefore, it is likely that

individuals from collectivistic cultures would have differences in the way that they make attributions from individuals from individualistic cultures (Mezulis et al., 2004). However, there is not a large amount of research on this topic. One meta-analysis that did address this was Mezulis and colleagues (2004), which examined self-serving bias. This study found that an optimistic explanatory style was normative in individuals from the United States. Other Western cultures did not score as high as the United States for a self-serving bias but were, on average, still higher than non-Western cultures, which demonstrated significant variability. However, almost all Asian cultures showed very small self-serving biases compared to those found in the United States (Mezulis et al., 2004).

International populations and Spain

In the past thirty years or so, international migration has increased substantially in many areas of the world (Ding et al., 2011). Moving to a different country is a major life transition that almost always leads to significant changes and challenges in many areas of an individual's life. Immigrant populations have to adjust to their new country psychologically, culturally, socially, and emotionally. Among other things, immigrants may be faced with language barriers, discrimination, loss of family and friends, not feeling at home, loneliness, and cultural barriers. It has been well documented that immigration is linked to many negative health outcomes, including mental health problems like anxiety and depression (Ding et al, 2011).

One such study of the link between stress of immigrants and depression was conducted in Spain. Revollo and colleagues (2011) examined stress as a risk factor for depression in Latin American immigrants in Spain. They concluded that stress was a significant predictor of depressive symptoms in these immigrants. Spain has recently seen

a very large increase in both immigrants and international students. In 2005, there were just over 45,000 non-resident students in Spain; in 2009, there were almost 85,000 (OECD, 2010). International students, like immigrants, are at heightened risk of developing depressive symptoms (Yakunina et al., 2013). As do immigrants, international students face challenges such as discrimination, language barriers, and separation from loved ones (Mori, 2000).

With both college students and international populations being high-risk populations for depression (Ibrahim et al., 2012; Ding, 2011), it is imperative to assess international college students for mental health issues.

Purpose

The present study examines the applicability of a cognitive diathesis-stress model of depressive symptoms among international students in Spain. While previous research has examined attributional style and stress as potential risk factors for depression, to the best of my knowledge, researchers have yet to examine cognitive diathesis stress models of depression specifically focused on an international immigrant population or the potentially unique stressors these immigrants face. Spain is of special interest in this regard as the population of international students in Spain has been rapidly increasing (OECD, 2010). With these considerations in mind, I examined attributional style, stress and the interaction of these factors as potential predictors of depressive symptoms in a sample of international students studying in Spain.

Methods

Participants

Participants were 163 international students who were enrolled in a college in Madrid, Spain. The minimum age was 18 and the maximum was 64 with a mean of 22.32 and a standard deviation of 4.86. The sample was 64.9% female. Thirty countries were represented, and 68.2% were from the United States. Length of stay in Spain ranged from one week to seven years, but almost one quarter (24.5%) had been there for one month at the time of completing the survey. Approximately 14% reported having been treated for depression at some point in their lives.

They were identified through various universities in Madrid. Participants were recruited by e-mail advertisements for the study, professor recommendations, and open meeting times to come and take the surveys.

Materials

The Patient Health Questionnaire (PHQ-9) was used to assess depressive symptoms. The PHQ-9 is a nine-item self-report measure, with response choices ranging from (0) not at all to (3) nearly every day. This is brief measure with similar sensitivity and specificity to comparable but significantly longer measures. The nine items that make up the measure are based on the nine criteria by which depressive disorders are classified in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). Each participant was assigned a score ranging from 0 to 27, based on the nine questions with a scoring range of 0 to 3 each. Scores of 5, 10, 15, and 20 are the cut points for mild, moderate, moderately severe, and severe depression, but some researchers have used 9 as a cut point for clinical depression. Major depression is diagnosed when five out of the nine symptoms, at least one being depressed mood or anhedonia, are selected as having been present for “more than half the days” in the past two weeks (Kroenke & Spitzer, 2002).

The Attributional Style Questionnaire (ASQ) was used to measure an individual's attributional style. The ASQ is an instrument well established in assessing causal attributions for hypothetical events. The ASQ includes 12 hypothetical events, 6 negative and 6 positive. Participants are asked to picture themselves in the situation being presented and write down a major cause for the event. They are then asked to rate that cause on internality, stability, and globality on a 7-point scale. A subscale for internality, stability, and globality can be calculated. Similarly, a composite positive score and a composite negative score, each focusing on either only positive or only negative events, can be calculated. An overall composite score, which includes all events and all subscales, is calculated (Haefel et al., 2008). For the purpose of this study, only the composite score results are reported. The analyses were run with both the composite negative and composite positive scores, but these results did not differ from those with the overall composite score. The developers of the measure warn against use of the subscales (internality, stability, globality) except for in the case of a very specific reason warranting use of these subscales. This is because these subscales have been shown to demonstrate only modest reliabilities, with various studies reporting Cronbach's alpha ranging from .21 to .69 (Tennen & Herzberger, 1986). Therefore, I did not analyze the data with these subscales.

A modified version of The Demands of Immigration Scale (DI) was used to assess specific international student stress factors. It is a 23-item survey that assesses items such as loss, not feeling at home, novelty, language accommodation, and discrimination for immigrants. It has demonstrated good internal consistency and construct validity (Ding et al., 2011). In conjunction with the measure developer, four items were deleted to make a

19-item survey designed for international students rather than immigrants. The items are rated on how much personal stress the particular item has caused the individual from (0) not at all to (5) very much. For example, in examining a language barrier, the DI measures not whether the individual speaks the native language, but whether an inability to speak that language is causing stress for the student. The grand total then indicates the immigration demands of the individual (Aroian & Norris, 2003).

Finally, 10-item version of the Perceived Stress Scale (PSS), which assesses thoughts and feelings in the past month, was administered. The scale has shown good psychometric qualities, including discriminant validity (Monroe, 2008). For each of the items, participants can respond from never (0) to very often (4). A final score was assigned for each participant by reverse scoring the positive items and adding all of the items to get a total. Research suggests that higher PSS scores are correlated with depressive symptoms (Cohen, Kamarck, & Mermelstein, 1983).

Demographic data was also collected. Participants were asked for their age, country of origin, any history of depression treatment (yes/no), and length of time to date in Spain. All measures were available in both Spanish and English. About 17% of participants chose to complete the measures in Spanish.

Procedure

The study was conducted in Madrid, Spain. Participants were asked what language they would like to receive the surveys in, English or Spanish. The surveys were then administered in a hard copy to the student, who was to complete them immediately on their own. When the student was finished, the survey was returned, and the participant was compensated with five Euros.

Results

There were 163 surveys completed; however, 12 participants were not used because they had not completed 25% or more of one of the four study measures. Therefore, 151 participants were included in analyses. Before transformations were made, 17.9% of the sample scored at or above nine on the Patient Health Questionnaire. This cut point has been used to demonstrate clinical elevations for depressive symptoms.

Table 1 shows the basic descriptive statistics for each scale before any transformations were made. To account for skewness (1.65) and kurtosis (3.40) of the patient health questionnaire, a logarithmic transformation was used. Similarly, to account for high kurtosis (1.27), a square root transformation was applied to the Demands of Immigration scores. All three transformations yielded better scores of skewness and kurtosis.

Pearson coefficients for the correlations between each of the four variables can be found in Table 2. Correlations between all measures were significant at the .01 level. The correlation coefficient of the two measures of stress was .54. For depressive symptoms and international student stress, it was .48, and for depressive symptoms and perceived stress, it was .56. Attributional styles were correlated with depressive symptoms at -.30.

As shown in Table 3 (Model 1), I examined attributional style, international student stress (demands of immigration), and the interaction of these two variables as predictors of depressive symptoms. In this model, the interaction of attributional style and international student stress was not statistically significant. Therefore, I removed the interaction term and examined a model including only attributional style and international student stress. In

this model, both demands of immigration and attributional style were both significant predictors. These results can be found in Table 3 (Model 2).

I also examined attributional style, perceived stress, and the interaction of these as predictors of depressive symptoms, which can be found in Table 3 (Model 3). The interaction was not statistically significant, so I removed the interaction term and examined a model with only attributional style and perceived stress. The results of this model can be found in Table 3 (Model 4). Both perceived stress and attributional style were statistically significant predictors in this model.

Discussion

The purpose of this study was to examine attributional style and stress (both overall perceived stress and specific international student stress) as predictors of depressive symptoms in a sample of international college students in Spain. There was no significant interaction between attributional style and stress in predicting depressive symptoms; however, both cognitive style and stress were each related to depressive symptoms. These simple relationships are consistent with previous findings (Alloy et al., 2006; Revollo et al., 2011; Monroe, 2008).

The significant relationships between attributional style, everyday life stress, and international student stress demonstrate the importance of these three factors in analyzing depressive symptoms in international students in Spain. In particular, it is interesting that both types of stress had significant relationships with depressive symptoms. More research should be conducted on specific stress factors in an effort to better understand the development of symptoms of depression in relation to individual stressors.

The correlation of attributional style with depressive symptoms was consistent with the findings of Alloy and colleagues that a negative attributional style is correlated with reporting a prospective incidence of depression (2006). The present study found similar results with a sample of international students. However, Alloy et al. did not examine stress as a factor of depression or the interaction of these three variables.

Revollo et al. (2011) examined stress as a risk factor for depression in Latin American immigrants in Spain and found that there was a correlation between stress from immigration and depression levels in the immigrants. The present study furthered this understanding by finding very similar results in a population of international students in Spain rather than immigrants in Spain.

Research by Mezulis and colleagues (2004) indicated that culture plays a role in the degree of optimism and pessimism in attributional styles. In particular, individuals from the United States often differed in the way that attributions were made from individuals from non-Western cultures, specifically from Asian countries (Mezulis et al. 2004). With these considerations in mind, I also examined United States students versus non-United States students. I completed the regression analysis with both groups, but this yielded results that were no different from the original analyses. Unfortunately, United States students could not be compared specifically to only Asian students because the number of students from Asia in the study was very low (3).

There are limitations to this study that should be noted. First, this study was a cross sectional survey. Without longitudinal data, one cannot examine predictors of change over time. This information about how the participants' scores in all areas change over a period

of time would provide valuable insight into how these variables can predict change in depressive symptoms over time.

Secondly, all measures were self-report. Self-report measures can be limited due to participants' abilities to self-reflect and accurately report this information. While this was not the ideal method of measurement to use, it was practical and provides an initial test of study hypotheses.

A third limitation to this study is that I measured depressive symptoms rather than the diagnosis of Major Depressive Disorder. The results could potentially vary significantly because of this distinction.

Future research should address the limitations of this study. A study that collects data immediately when a person arrives and then at various points throughout the next few years would allow the investigators to examine the role of cognitive style and stress longitudinally.

Ideally, similar future studies would be complemented by interviews or some other method rather than self-report surveys. This would avoid some of the biases that can be present in self-report measures, such as insufficient self-knowledge or failure to accurately report information. Also, a larger study or a study aimed at one specific group of international students, such as students from the United States or from developing countries, would allow for the identification of differences across cultures. Finally, a future study could look at Major Depressive Disorder rather than depressive symptoms.

Future research could also measure different ways of operationalizing the diathesis-stress model. For example, it could be useful to do a similar study using a different aspect of cognitive vulnerability, such as dysfunctional attitudes rather than attributional style.

Different types of stress could be measured as well. For example, measuring stress specific to college students may be informative. Also, international student stress factors could be looked at on an individual basis. Specifically, measuring the individual influence of a language barrier on the development of depressive symptoms could potentially reveal significant understandings of how one factor can influence depression.

This study provides a valuable contribution to the international student literature on stress, attributional styles, and depression. While it is a small-scale study, this research provides a basis for future research in the area of depressive symptoms, attributional styles, and different types of stress in international students.

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Table 1

Descriptive Statistics

<u>Measure</u>	<u>Range</u>	<u>Mean</u>	<u>Standard Deviation</u>
Patient Health Questionnaire	0 - 25	5.11	4.46
Attributional Style Questionnaire	-4 - 13	3.58	2.79
Perceived Stress Scale	0 - 35	14.13	6.46
<u>Demands of Immigration</u>	<u>0 - 50</u>	<u>14.58</u>	<u>8.66</u>

Note: N=151; Attributional Style Questionnaire is based on overall score; scores listed are pre-transformations

Table 2

Pearson Correlations

Measure	PHQ	ASQ	PSS	DI
PHQ	--	-.30*	.56*	.48*
ASQ	-.30*	--	-.30*	-.22*
PSS	.56*	-.30*	--	.54*
DI	.48*	-.22*	.54*	--

Note: N=151; Attributional Style Questionnaire is based on overall score; PHQ=Patient Health Questionnaire, ASQ=Attributional Style Questionnaire, PSS=Perceived Stress Scale, DI=Demands of Immigration

* Correlation is significant at the 0.01 level (2-tailed).

Table 3
Multiple Regression Analyses

	Standardized Beta		p value
<u>Model 1</u>	Coefficients	t	(significance)
Attributional Style	.15	2.06	.04
International Student Stress	.50	4.02	<.01
<u>Stress*Attributional Style</u>	<u>.11</u>	<u>.88</u>	<u>.38</u>
<u>Model 2</u>			
Attributional Style	.21	2.88	.01
International Student Stress	.43	5.97	<.01
<u>Model 3</u>			
Attributional Style	-.08	-1.17	.25
Perceived Stress Scale	.54	5.47	<.01
<u>Stress*Attributional Style</u>	<u>-.01</u>	<u>-.06</u>	<u>.95</u>
<u>Model 4</u>			
Attributional Style	.14	2.01	.05
Perceived Stress	.52	7.40	<.01

Note: N=151; Dependent variable= Depressive symptoms