The Impact of Personality on Depression among University Students in Taiwan

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**Background:** Depression in Taiwanese university students is a significant problem in terms of life and financial costs. The purpose of this study was to examine the impact of four selected personality traits, namely interpersonal problems, ideas of being persecuted, social students in introversion, and self depreciation, on the inclination to be depressed among students in Taiwanese university.

**Methods:** A self-report survey was administered to students at a Taiwanese university and consisted of three parts: demographics, the Chinese version of the Basic Personality Inventory (BPI), and the Taiwanese Depression Questionnaire. The level of depression among students was assessed, and the relationships among the various variables were explored using analysis of variance (ANOVA) and regression.

**Results:** Altogether, 255 students successfully completed the survey. Overall, 37.62% of students were suffering from depression, including 4.7% who indicated that they were severely depressed, 18.30% who were moderately depressed, and 14% who were mildly depressed. In a multiple-regression model, ideas of being persecuted and self depreciation were both significant when predicting an inclination to be depressed.

**Conclusion:** Depression is a problem for many university students in Taiwan. Understanding which personality traits are related to depression in Taiwanese students is important for student affair administrators and medical professionals and will help them to prevent and treat this debilitating illness. (Chang Gung Med J 2011;34:528-535)

**Key words:** depression, university students, Taiwan, personality traits

Much has been studied and written about the prevalence and costs of depression. Depression is a common mental disorder associated with depressed mood, loss of interest or pleasure, feelings of guilt or low self-esteem, disturbed sleep or appetite, low energy, and poor concentration\(^1\). Cumulative lifetime prevalence rates for major depressive episodes have been estimated at over 12% for Canadians and Europeans, and over 16% for Americans\(^2,3\). Annual prevalence rates are also high. For example, over a period of one year, 6.7% of adults in the United States suffer from major depressive disorder.\(^4\) Similarly, 4.8% of Canadians and 4% to 5% of Taiwanese suffer from depression annually\(^5,6\).

The costs of depression are significant in terms
of life and financial losses. Human outcomes vary among affected individuals; however, serious (and common) symptoms include decreased energy, insomnia, over (or under) eating, suicide ideation (including attempts), and a host of health issues including persistent pain, headaches, and digestive problems. Estimated financial losses resulting from depression are staggering. In the United States, the cost of depression is on par with other major illnesses such as AIDS, coronary heart disease, and cancer. Indeed, depression ranks third in terms of prevalence and sixth in terms of economic burden. Chan and associates, in a 2006 study, estimates the annual financial burden of depression for Taiwan to be US$116.6 million for treatment alone. This is significant as it represents 1.2% of total national expenses. This does not include indirect costs to individuals, firms, and government entities resulting from productivity and other operational losses.

The relative prevalence of depression in college students has also received much attention in the literature. Vredenburg and colleagues classified college student depression as a serious problem with 75% of depressed students being depressed for more than three months, and half of these individuals had contemplated suicide. In another study, researchers found that 53% of the sample reported that they experienced depression since beginning college, and 9% stating that they had considered committing suicide since starting college. Aside from these statistics regarding prevalence of depression in college students, other studies have tackled cross-cultural differences among college students in Asia and the United States, and the results have indicated culture can play a significant role in depression. Related to the current study’s focus on Taiwan, Lin and colleagues found depression prevalence in Taiwanese adolescents (pre-college) to be 12.3%, and Tang and associates found that 9.1% of Taiwanese adolescents surveyed reported a suicide attempt in the preceding year with depression tagged as a leading indicator.

Narrowing the focus more, beyond even cultural differences, are studies involving individual personality and depression, including many efforts specifically focused on college students. Personality refers to “dispositions to relate with the world and interact with it in particular ways”. Personality traits reflect different modes of relating to the situation or the environment and generally remain consistent over time. Chioqueta and Stiles, in a sample of Norwegian college students, found that depressive symptoms were positively predicted by neuroticism and openness, and negatively predicted by extraversion. With Japanese college students as a focus of study, Matsudaira and Kitamura found that specific depression was predicted by lower reward-dependence, persistence, self-directedness, cooperativeness, and self-transcendence. Most relevant to the current study, Chien and associates studied depression and personality among college students in Taiwan. Utilizing a longitudinal approach, the researchers followed students over a period of two years and found that the affective-cognitive domain of depression measured in the second year could be predicted by high neuroticism combined with low agreeableness, extraversion, and conscientiousness measured in the first year.

Perhaps one of the chief purposes for studying personality and depression among college students within a country or culture is to promote a better understanding of how to identify high risk college students who may develop serious depression and then to design effective intervention strategies. Examining personality traits would be very helpful in identifying those at-risk youth and could be helpful in treating depression. Considering the extensive human and financial costs associated with depression in Taiwan, along with the significant prevalence of the illness among college students, work in this area can be very valuable to both students and many other stakeholders. Specifically, the current study extends prior studies in this area by providing additional relevant context by examining the association of select personality traits (some of which have received little attention previously) with depression among Taiwanese college students. This focus is especially important due to the cultural and individual personality differences among study subjects in terms of depression.

**Selected personality traits**

The personality traits selected for the current study were interpersonal problems, ideas of being persecuted, social introversion, and self depreciation. These personality traits have been linked to depression. Patients with major depressive disorder and depressive personality disorder reported more inter-
personal distress and were more likely to have interpersonal problems related to dominance and control than submissiveness.\(^{22}\) Miller and Chabrier found that patients with delusions of persecution in combination with delusions of guilt were significantly more likely to make medically serious suicide attempts (an outcome of depression) than patients with single categories of delusions or combinations other than guilt and persecution.\(^{23}\) Many studies have looked at introversion/extraversion and depression, and a recent study found that the overall level of introversion is somewhat higher in depressive patients than in the general population.\(^{24}\) Finally, in relation to self depreciation, Ross and colleagues found self-esteem to be negatively related to depression in a sample of nursing students.\(^{25}\)

**METHODS**

**Subjects and survey**

The instrument was administered to 255 undergraduates (mostly freshmen) enrolled in ten classes of a core course at Chang Gung University in Taiwan. They represented majors from the Colleges of Medicine, Engineering, and Management. The researchers obtained permission from class instructors to conduct the survey and followed standard research procedures. The self-report survey utilized in this study consisted of three parts: demographics, the Chinese version of the Basic Personality Inventory (BPI), and Taiwanese Depression Inclination. Demographic information collected included gender, major, current credit hours, year in school, zone of registered permanent residence, educational background of parents, and family economic situation. Survey participants were asked to select a response from a list of possibilities.

Relevant portions of the Chinese version of BPI were utilized to measure the selected personality traits. The BPI was developed by Douglas N. Jackson and is a multiphase personality assessment.\(^{26}\) In relation to both internal consistency and validity, the BPI has exhibited consistent and favorable psychometric properties.\(^{27}\) The Chinese version was translated by Wu Wu-Dian. Each of the four selected personality traits was assessed using five Likert-type items. These were frequency measures scaled 1 to 5 (“never” to “always” respectively). A higher overall average score for each phase indicated a more negative personality trait.

Depression questionnaire was measured utilizing the Taiwanese Depression Questionnaire (TDQ) scale. This 18-item measure was created by psychiatrists at two Taiwan hospitals: Chang Gung Hospital and National Cheng Gong Hospital University.\(^{27}\) This Likert-type frequency scale (range 1 to 3) had anchors at “never or seldom” and “usually or always”, and a higher score indicated greater depression inclination. In an effort to interpret results from this measure, the not-for-profit organization, John Tung Foundation, has provided a classification system to assist researchers in grouping subjects into levels of depression; this system is presented later in the paper in the Results section.\(^{27}\)

**Statistical analysis**

The relationships among variables of interest were explored using analysis of variance (ANOVA) and regression. ANOVA is commonly utilized to look at the impact of differences in variables on a criterion-variable.\(^{28}\) In the current study, ANOVA was utilized specifically to determine the impact of differences in demographic variables on depression inclination and the selected personality traits.

Regression analysis is an approach used to investigate the relationship between a criterion-variable and a set of predictors, with one of the primary goals being to build an explanatory model. Regression enables the researcher to not only explore the linear relationships between the criterion-variable and the predictors but also the predictors’ ability to predict.\(^{29}\) For the current study, the level of depression inclination was regressed on the personality traits of interest.

**RESULTS**

**Characteristics of the subjects**

Altogether, 255 students successfully completed the survey. The demographic characteristics of the sample are summarized in Table 1. Of note, most (60%) respondents were female, and the majority (58%) of the students were first year students. The two predominant majors within the sample are nursing (46%) and electrical engineering (22%). Students are, as a majority, enrolled in 21-25 credit hours, and most (51%) are from north Taiwan. Almost 40% of students’ parents have a college education of some
type, and more than half of the students come from middle-class families (Table 1).

Summary statistics and student depression

Table 2 presents the mean, standard deviation, and scale reliability (Cronbach’s $\alpha$) for each personality trait and for depression inclination. All estimates of reliability exceed the recommended alpha value of 0.60 for basic research (Table 2). The classification system for grouping subjects based on level of depression (A through E) is based on the total score for each respondent and is as follows:

A. (0-8) indicates the individual is emotionally stable and able to adjust emotions to relieve stress.

B. (9-14) indicates the individual’s emotions fluctuate, and these changes and their causes are noticeable. A measure of care should be taken to avoid falling into depression.

C. (15-18) indicates the individual is mildly or moderately depressed. Through interactions with concerned associates and by expressing emotions, the individual may be able to quickly relieve tension and lessen the impact of depression.

D. (18-29) indicates the individual is moderately to severely depressed and should seek help from qualified professionals.

E. (over 29) indicates the individual is severely depressed and requires medical assistance. Appropriate long-term therapy should be arranged. 

The results showed that approximately 62.35% of students are healthy in terms of depression. However, 37.62% of students suffered from depression of some form, including over 4.7% being indicated as severely depressed, 18.30% as moderately depressed, and 14% as mildly depressed. These proportions in the student sample may be, in part, related to the timing of data collection because the survey was administered during the same time period as the midterm exams.

Empirical analysis

Analysis of variance statistics were calculated to examine differences in the demographic variables
with respect to depression inclination. Table 3 reports F-values and associated $p$-values for each demographic variable in relation to depression among students. Only differences in current credit hours were significant at the 0.05 level. Differences in the other demographic variables, namely gender, major, year in school, residency zone, parents' education, and family economic situation were not significant in relation to depression inclination (Table 3).

The primary purpose of the study is to explore the impact of select personality traits, individually and collectively, on depression inclination in Taiwanese college students. Correlations among these variables are presented in Table 4 and indicate whether a positive relationship exists between each personality trait and depression inclination. In statistics, the hypotheses about the correlation coefficient $\rho$ between variables $X$ and $Y$ can be tested using the Fisher transformation applied to the sample correlation coefficient. Applying this method, each parenthesis in the Table 4 provides the 95% confidence interval for the corresponding correlation.

Depression inclination was regressed on each personality trait individually (simple regression) and on all traits simultaneously (multiple regression). The final model was obtained from forward stepwise model selection with $\alpha_{entry} = \alpha_{stay} = .10$ (correspond-

<table>
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<th>Demographic variable</th>
<th>Characteristic</th>
<th>n</th>
<th>Mean (DI)</th>
<th>SD (DI)</th>
<th>F</th>
<th>$p$</th>
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<td>Center</td>
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<td>Master</td>
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<td>10.22</td>
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<td>8.09</td>
<td>5.19</td>
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<td>11.57</td>
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<td>40</td>
<td>40</td>
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</table>

*: significant at the 0.05 level; †: North: above Miaoli; Center: between and including Changhua and Miaoli; South: below Changhua.
Table 4. Correlation Matrix among Depression Inclination and Personality Traits

<table>
<thead>
<tr>
<th></th>
<th>DI</th>
<th>PIP</th>
<th>PPI</th>
<th>PSI</th>
<th>PSD</th>
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<tr>
<td>DI</td>
<td>1.00</td>
<td>0.27*</td>
<td>0.38*</td>
<td>0.35*</td>
<td>0.37*</td>
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<tr>
<td>PIP</td>
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<td>0.54*</td>
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<td>0.46*</td>
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<td>PPI</td>
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<td>1.00</td>
<td>0.58*</td>
<td>0.61*</td>
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<td>PSI</td>
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<td>0.58*</td>
<td>1.00</td>
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<tr>
<td>PSD</td>
<td>0.37*</td>
<td>0.46*</td>
<td>0.61*</td>
<td>0.58*</td>
<td>1.00</td>
</tr>
</tbody>
</table>

**Abbreviations:** DI: Depression Inclination; PIP: Interpersonal Problems; PPI: Persecutory Ideas; PSI: Social Introversion; PSD: Self Depreciation; *: significant at the 0.05 level.
Each parenthesis indicates the 95% confidence interval for the corresponding correlation.

The adjusted \( R^2 \) of this model is 0.7606 and \( e-N(0, 54.5) \). The variables for ideas of being persecuted (PPI) and self-deprecation (PSD) are the two significant factors for the depression index, whereas interpersonal problems (PIP) and social introversion (PSI) are not significant (Table 4).

**DISCUSSION**

The results of the study indicate that depression represents a serious problem in the lives of many students at Chang Gung University. As mentioned earlier, one limitation of the study is that the constructs were measured around a midterm exam, and this may have had an impact on the correlation and regression results. Further, the cross-sectional survey methodology utilized in the study does not rule out the possibility that other unmeasured personality or contextual variables may have impacted on the depression. Finally, as the sample is drawn from a single university in Taiwan, the results are not immediately generalizable to other students with other demographic characteristics. However, as mentioned earlier, this narrow focus allows for a richer study of the unique cultural aspects of Taiwan as it pertains to depression among university students.

The results also indicate that the traits of ideas of being persecuted and self-deprecation individually and collectively play a role in predicting depression for students in Taiwan. The advantage of examining multiple personality traits simultaneously is that overlapping constructs can be identified, as well as variables that contribute uniquely to college student depression. These results, in turn, provide some practical implications for Taiwanese clinicians, mental health professionals, counselors, faculty, and administrators. A better understanding of the personality traits that are significant to the prediction of Taiwanese student depression is helpful in identifying students at-risk. Further, a large body of existing research on depression has yielded many useful and practical approaches to the prevention and treatment of this debilitating illness. To maximize the efficacy of prevention or treatment approaches, it is best for professionals to be able to tailor strategies based on the student's individual personality profile. The current study adds to the existing literature by identifying a specific personality profile associated with depression among Taiwanese university students. Extensions of this research should examine additional personality and contextual factors that may be associated with depression and examine the efficacy of prevention and treatment programs through longitudinal studies.

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人格特質對台灣大學生憂鬱的影響

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背 景：不論從人性或從財政的角度來看，憂鬱症對於台灣大學生來說都是一個值得注意的問題。本研究的主要目的是檢視四個人格特質——人際問題、迫害感、社交內向性、貶抑自我價值等對台灣大學生憂鬱傾向的影響。

方 法：在台灣一所大學裡，執行一個自我審視的調查，調查內容包括：人口統計資料、中文版本的基本人格特質量表（Basic Personality Inventory, BPI）、和台灣憂鬱量表。從調查得到學生憂鬱的程度及相關研究數字，我們使用 ANOVA 和 Regression 分析憂鬱和研究變數之間的關係。

結 果：在 255 個學生所完成的調查中顯示：37.62% 的學生受苦於憂鬱，其中包括超過 4.7% 的學生是嚴重的憂鬱，18.30% 是中度，14% 是輕度。在人格特質對台灣大學生憂鬱傾向影響的分析中，從 simple-regression 中，四項特質人際問題、迫害感、社交內向性、貶抑自我價值，都是呈現個別顯著性的影響。以 multiple-regression 分析則是以迫害感、貶抑自我價值兩特質所建構的模型最具預測能力。

結 論：憂鬱傾向是許多台灣大學生共有的問題。對於致力於預防這種食忄心的學生憂鬱之學校當局和醫療專業人士，了解哪些人格特質是與學生的憂鬱相關的，是十分重要的。

(長庚醫誌 2011;34:528-35)

關鍵詞：憂鬱症，大學生，臺灣，人格特質

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