

ASSESSMENT AND COMPARISON OF THE STRESS EXPERIENCED BY  
INTERNATIONAL AND AMERICAN STUDENTS AT THE  
UNIVERSITY OF NORTH TEXAS

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## Abstract

There were two purposes of the current study: (1) to evaluate if the East Asian Student Stress Inventory could be used to assess the stress experienced by International and American students at the University of North Texas and (2) to determine if the Inventory could discriminate between the two groups on the basis of the stress assessment. A sample of International (n=205) and American (n=216) graduate and undergraduate students completed the inventory. Results indicated that the EASSI could be generalized to a wider spectrum of International students. Using principal component factor analysis with varimax rotation, eight factors were extracted: culture shock, physiological symptoms, family pressure, test anxiety, financial difficulties, attitude toward study, social support and academic self esteem. The inventory clearly discriminated between the two groups on the subscales of culture shock, family pressure and attitude toward study and the International students scored higher on these subscales.

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Assessment and Comparison of the Stress Experienced by International and  
American Students at the University of North Texas

The United States (U.S.), a world center of advanced technology and sophisticated knowledge, has recently attracted many international students from all over the world. More international students enroll in U.S. colleges and universities than in other countries. The international student population in the U.S. has greatly increased during the second half of the last century. Before World War II, only 10,000 international students were enrolled in U.S. colleges compared with 500,000 international students from more than 160 countries who were enrolled in 1998-1999 (Institute of International Education, 2000). All indicators suggest that the number of international students will continue to grow, especially when U.S. institutions with declining enrollments actively recruit students from as far away as Hong Kong, and from many oil-producing rich countries in the Middle East (Schram & Lauver, 1988).

The presence of these students on our university campuses provides an opportunity to promote cultural and international understanding. In addition to the achievement of personal goals, these “cultural ambassadors” will enhance international understanding and collaboration to address social problems such as hunger, AIDS, drug abuse, which no country can solve alone (Sandhu & Asrabadi, 1994). Research has shown that international students may be a high-risk group with more psychological problems than their U.S. peers. Pedersen (1991) summed up the situation succinctly in his statement, “*International students are likely to experience more problems than students in general and have access to fewer resources to help them.*” The competition for grades,



the need to perform, relationships, career choice, financial pressure and many other aspects of the college environment, along with the personal obligations and hassles of daily life, can lead to stress for the modern college student ([www.counsel.ufl.edu](http://www.counsel.ufl.edu)).

Unlike American students who first experience college life, many International students encounter culture shock once they enter the U.S. and engage in campus activities. They experience differences in climate, food, social values, modes of behavior, and verbal and nonverbal communication (Dillard & Chisolm, 1983). These experiences often result in a loss of cultural and personal identity. Though most International students have been academically successful in their native lands, many experience new and stressful academic pressures on college campuses in the U.S. Most International students in the U.S. place high priority on the academic adjustment and view interpersonal happiness as a social accessory. According to Klein, Miller, and Alexander (1974), International student's anticipated concerns centered on finances, course schedules, housing arrangements, and scholastic performance. These concerns were rated higher than concerns about social contact and being homesick. The areas of language barrier (Babiker, Cox, & Miller, 1980), break from family support system, and problems related to culture shock and social adjustment (Bochner, 1972) are common and recurrent themes.

Although many International students complete their studies without apparent difficulty, others experience significant problems in adjusting to life in the United States. These problems include difficulty with English language proficiency, insufficient financial resources, social integration, problems in daily life tasks, homesickness, and

role conflicts. In moving to another country for the first time, International students often experience a profound sense of loss. Consequently, they often feel less confident, more tension, take less time off, enjoy it even less, and become confused over how to have fun (Dillard & Chilsom, 1983). International students typically encounter academic, personal and social problems that are directly related to their efforts to adjust to their new culture and to the loss, even if temporarily, of the old. For these students, initial expressions of happiness about being in the U.S., can soon turn to feelings of sadness and often disappointment (Mallinckrodt & Leon, 1992). Upon coming to the U.S., International students lose their shared identity that comes from being with family and peers. As a result, they often feel lonely, not unlike their U.S. counterparts. Complicating adjustment to the loss of social supports is the students' ability to communicate in the host culture.

Despite the needs of international students in campuses, there are few systematic studies of the cultural adjustment of this population. Markus and Kitayama (1991) have argued that cultural forces significantly affect stress appraisals and coping attempts, and cross-cultural comparisons of these are needed as well. To fill this gap, Ding (1993) designed an East Asian Student Stress Inventory to study stresses of East Asian students studying in the University of North Texas (UNT). However, while his study generated curiosity among researchers about the stress status of East Asian students as a whole, there was no effort made to validate the scale on a wider spectrum of international students and American students on campus. Is it appropriate to use the EASSI on International students besides East Asians? Would international students report different stresses than American peers on campus on the EASSI?

The two purposes of this study were: (1) to evaluate if the East Asian Student Stress Inventory could be used to assess the stress experienced by International and American students at the University of North Texas and (2) to determine if the Inventory could discriminate between the two groups on the basis of the stress assessment on the same campus in the Spring semester, 2001.

## Methodology

### Participants

The participants of the study were 421 International (n=205) and American (n=216) graduate and undergraduate students, who volunteered to take part in the study. Their age range was 17 to 61 years with a mean age of 22.66 (SD = 5.24).

### Questionnaire and Measures

The reliability coefficients for the East Asian Student Stress Inventory (EASSI) achieved by Ding (1993), will be reported first and the reliability estimate obtained in the current study in Spring 2001 will be reported later in the results and discussion sections. The EASSI containing 31 survey questions was designed and validated by Ding (1993). When the EASSI was first developed, it was administered twice (2-week interval) to a sample of 56 Asian students to establish scale reliability. Cronbach's alpha reliability coefficients of the EASSI were as follows: Cronbach's alpha for the entire EASSI was .8226, and .8346 for the social-psychological dimension and .7735 for the physiological dimension. The EASSI was deemed to have sufficient reliability.

Ding (1993) further established construct validity for the EASSI by differentiating between the responses of 235 East Asian students with regard to age, gender, academic status, major, marital status, living arrangements, financial problems, TOEFL scores, and length of stay in the United States. A principal component factor analysis with varimax rotation was employed in the initial and final statistics, which yielded eight factors (test anxiety, physiological symptoms, social support, financial difficulties, cultural shock, attitude toward study, family pressure, academic self esteem) with eigenvalues greater than one, which accounted for 62.6% of the total variance. The EASSI was deemed to have sufficient construct validity.

The current descriptive study uses a validated questionnaire to assess the stresses experienced by International and American students. Stress, as measured by the EASSI, and the eight factors (Culture shock, Physiological symptoms, Family pressure, Test anxiety, Financial difficulties, Attitude toward study, Social support and Academic self esteem) will be treated as the dependent variables. The independent variable is group membership, which contains two levels, International students and American students. The independent t-test was used to test for mean differences between the two groups, International and American students, on each of the eight factors (subscales) of stress. Demographic variables (Age, Gender, Academic class, Major field of study, Marital status, Financial status) were used to describe the differences between groups (Table 9).

#### Delimitations

1. The study is limited to college students at the University of North Texas in Denton, Texas.

2. The study is limited to the collection of data in the Spring, 2001 semester.
3. To reduce variance and diversity only Caucasian students will be recruited for the American sample.

### Limitations

- 1 The responses of participants were self-reported and there was no way of verifying the accuracy of such statements.
- 2 International students were recruited primarily through organized student groups on campus. However, this study was not able to recruit international students who were not affiliated with such groups, which could confound research findings.
- 3 Although proportional stratified sampling was used to increase proportionate representation of diverse students on campus, the international student sample however, was disproportionately (65%) represented by ten countries (Table 2); because the other 29 countries had fewer representation, study findings were not truly reflective of the “international” student population as a whole.
- 4 Because American and International students were not recruited using identical methods, it could seriously undermine the accuracy of data collection. For instance, international students were recruited using student groups while American students were from organized classes serving a cross section of students. Although such classes were selected because of the diversity of students enrolled, no attempt at randomization of classes was done.

- 5 There were a significantly larger number of Freshmen in the American sample (n=103, 47.7%) than in the International group (n= 29,14.1% of the International sample).

### Procedures

The Institutional Review Board at the University of North Texas approved the field methodology for this study (Appendix A). A convenience sample of students enrolled in Spring semester, 2001, at the University of North Texas served as study participants. A calculation of sample size based on a power level of 0.85, a small effect size of 0.35, and an alpha of 0.05 suggested a sample size of at least 300 students (150 International and 150 Caucasian American students) from the University of North Texas enrolled in the Spring semester, 2001. The University of North Texas currently has an enrollment of approximately 27,000 students.

The International student population of 205 was selected through proportional non-random sampling through assistance from the International Student and Scholar Office of UNT, and international student groups on campus. To ensure accuracy in proportional sampling, the proportion of International students selected for the study was determined by their ratio in the student population (Table 2).

The American sample of 216 was the comparison group. It was selected from students enrolled in selected classes on campus. Classes selected were those serving a wide spectrum of college students, especially those enrolling students from different schools and disciplines, in order to reduce selection bias. To reduce variance or diversity in the American sample, only Caucasian volunteers were recruited.

Data were collected using the EASSI in Spring semester, 2001. Each subject was given a cover letter and questionnaire (see appendix B and D). The cover letter outlined the purpose of the study, stated participation is voluntary, and assured that all data collected were anonymous. The cover letter also explained the potential benefits and importance of the study. Subjects were given a brief description and introduction to the study by the researcher before implementation. No names of students were written on the surveys. All surveys were locked in a cabinet for protection.

The data from International students were collected through surveys distributed at various student organization meetings, including groups representing diverse racial, ethnic, cultural groups and nationalities. Subjects were strongly encouraged to complete the questionnaires in the meeting; others were permitted to take these surveys home for completion, which were collected by the student organization leadership, and later forwarded to the investigator. To increase anonymity and confidentiality, subjects were asked to return the surveys in sealed envelopes. Examples of International student organizations on campus included the Bangladesh Student Association, Chinese Students and Scholars Association, India Student Association, Indonesian Student Association, Malaysian Student Association.

The data from the American student sample were collected using subjects in selected classes. Classes were selected if they reflected a cross-section of the university population. In other words, these classes had students enrolled from all schools and disciplines. Instructors were approached to obtain permission for the questionnaires to be

distributed within their classrooms. If an International student completed the survey in the core classes, his/her data was added to those from the International student samples.

A sample of 421 students at the University of North Texas, Denton, completed the EASSI. Although it was a convenience sample, the number of subjects allowed for analysis of reliability and validity of the EASSI. The sample size of 421 was deemed acceptable since it exceeded the minimum requirement of having five times the number of subjects for each scale item (Nunnally, 1978). The ratio of EASSI items to the number of subjects is 1:13.

#### Data Analysis

Data were analyzed using descriptive statistics, a principal components factor analysis with varimax rotation and independent sample t-tests. Frequency analysis and descriptive statistics were performed for analyzing demographic information of the sample. Cronbach's coefficient alpha was used to estimate the reliabilities of the two subscales (psychosocial and physiological) of EASSI as well as the eight factors (subscales). Principal component factor analysis with varimax rotation was used to extract underlying components. The SPSS (Statistical Package for the Social Sciences, 1999) was used for all necessary computations and a significance level of .05 was used for all analyses.



## Results

### Demographic Data of Subjects

Five hundred copies of the questionnaire were distributed to American and International students from thirty-nine countries of the world. Four hundred and thirty questionnaires were returned, but nine of them failed to respond to the scale. Thus, the usable rate of the questionnaires was 84.2%. Table 1 presents a frequency analysis and descriptive statistics for demographics of the sample. The sample population was 48.5% male and 51.5% female, with a mean age of 22.66 years ( $SD = 5.24$ ). Table 2 shows the break up of the International students from 39 countries of the world. Of the sample, 294 (69.8%) were undergraduate students (Freshman 132, 31.4%; Sophomore 66, 15.7%; Junior 47, 11.2%; and Senior 49, 11.6%) and 127 (30.2%) were graduate students. Nearly one-third (29.5%) of the students were identified as having their major as Computer Science or computer-related subjects, and 70.5% studied a non-computer science major.

Only nine percent of the subjects were married. Twenty four percent of the students (Groups 1 and 2 of the financial self-assessment) did not consider themselves to have any financial problems, whereas 27 (Groups 5 and 6) thought they had considerable financial problems; the remaining 49% (Groups 3 and 4) reported moderate financial problems.

Of the International subjects 61.5% were males and 38.5% were females, with a mean age of 24.17 years ( $SD = 4.64$ ). One hundred and twenty three International subjects were undergraduate students (Freshman 29, 14.1%; Sophomore 20, 9.8%; Junior 30, 14.6%; and Senior 44, 21.5%) and 82 were graduate students. Almost half (48.2%)

of the International students were identified as having their major as Computer Science or a computer-related subjects, and 51.8% studied a non-computer science major. Majority of the International students (89.4%) were unmarried and only 10.6% were married. About 19% students did not report of having any financial problems, whereas 29.1% considered themselves as having severe financial problems; the remaining 52% of the International students reported moderate financial problems.

Of the American subjects surveyed, 36.1% were males and 63.9% were females, with a mean age of 21.22 years ( $SD = 5.38$ ). One hundred and seventy one American subjects were undergraduate students (Freshman 103, 47.7%; Sophomore 46, 21.3%; Junior 17, 7.9%; and Senior 5, 2.3%) and 45 were graduate students. Interestingly only 10% (21 students) of the American students were identified as having their major as Computer Science or computer-related subjects, and 90% studied a non-computer science major. About 19% students ( $n=41$ ) did not decide about their major field of study as yet. Marital status of the American sample also is slightly different from the marital status of the International students. Only 17 students out of 216 (7.9%) were married whereas 199 (92.1%) were unmarried. About 28.7% American students (Groups 1 and 2 of financial self-assessment) did not report of having any financial problems, whereas 25.5% considered themselves as having severe financial problems (Groups 5 and 6); the remaining 45.8% of the American students (Groups 3 and 4) reported moderate financial problems.

### Reliability of the EASSI

The higher the EASSI scores, the more stress the respondents experienced. Alpha values for internal consistency for the entire scale, social-psychological and physiological subscales were .7969, .7329 and .8265, respectively (Tables 3 and 4). The alpha values for the eight factors extracted are listed in Table 8.

### Construct Validity of the EASSI

To establish construct validity of the EASSI using the 31 items, a principal components factor analysis with varimax rotation was used. This yielded eight factors with eigenvalues greater than 1, which accounted for 57.62% of the total variance (See Table 5). EASSI items were originally designed by Ding to reflect eight content areas related to stress of East Asian students. A comparison between the eight factors generated through factor analysis in the current study (Table 5) and Ding's eight designated content areas produced interesting results. Six content areas (family pressure, test anxiety, culture shock, financial difficulties, attitude towards study, and physiological symptoms) corresponded with Ding's factor analysis (Table 6), although several items were clustered into different factors.

## Discussion

### Reliability and Internal Consistency of the EASSI

Since "Correct Item-Total Correlation" represents the Pearson's product moment correlation coefficient between the score on the individual item and the sum of the scores on the remaining items, the internal consistency of the questionnaire can be calculated based on the average correlation of items within the test. Alpha values for total items and

two subscales of the EASSI were high enough to be acceptable. The results of data analysis suggest that the 31 items of the EASSI are homogenous and measure the same constructs of stresses of International and American students.

### Construct Validity

Factor analysis. The original items of the EASSI were developed from a review of the literature on stress and East Asian students in the United States. Factor analysis is a method for extracting common factor variances from sets of measures. The principal component factor analysis with the varimax rotation was deemed to be the most appropriate procedure for this study. Eight loading factors with an eigenvalue larger than 1 were obtained, accounting for 57.62% of total variance (Table 5).

Factor 1 (Culture Shock), accounting for 11.04% of total variance has an almost perfect match with the factor IV of Ding's study except for one item (20). Unlike American students who first experience college life, many International students encounter culture shock once they enter the U.S. and engage in campus activities. They experience differences in climate, food, social values, modes of behavior, and verbal and nonverbal communication (Dillard & Chisolm, 1983). The perception of being discriminated against is a common indicator of the cultural shock experienced by most International students (Orpeza et al., 1991). The mean scores of International and American samples were 2.7617 and 2.1601 respectively. The independent sample t-test showed significant difference between International and American students on culture shock,  $t(419) = -11.078$ ,  $p = .0001$ . These statistical confirmations as well as the variety

of International students' response to the cultural problem authenticate the importance and validity of 'culture' as an important factor.

Factor 2 (Physiological Symptoms), all the four items of the physiological subscale loaded on this factor. In a study by Allen and Cole (1987), they reported that International students believed that complaining of anxiety, loneliness, or distress and seeking psychotherapy would result in a loss of "face." Therefore, they were more likely to somatize their interpersonal problems in order to receive medical care or receive advice from a health professional, which they found more culturally acceptable. This approach was described as frustrating to those working with International students. Researchers have reported that International students visited university health centers, to seek treatment for their restlessness and distress, disproportionately to their numbers on campus (Hirsch & Ellis, 1996). However, the independent sample t-test did not indicate a significant difference between International and American students on this factor and the t-test results are:  $t(419) = 0.065, p = 0.948$ .

Factor 3 (Family Pressure) appears to be a significant stressor for International students. They typically encounter academic, personal and social problems that are directly related to their efforts to adjust to their new culture and to the loss, even if temporarily, of the old. For these students, initial expressions of happiness about being in the U.S., can soon turn to feelings of sadness and often disappointment (Mallinckrodt & Leon, 1992). Upon coming to the U.S., International students lose their shared identity that comes from being with family. International students are generally more collectivistic and dependent emotionally on their nuclear and extended family.

Incidentally, the factor of family pressure, although also listed in Ding's study, has grown in significance in the current study. This factor alone accounts for 7.34% of total variance. Also, both International and American student samples rated family pressure as a significant stressors in their lives. The independent sample t-test,  $t(419) = -2.460$ ,  $p = 0.014$ , showed a significant difference between International and American students on family pressure. While the family can provide financial, moral and social support, it can also exert extra pressure, thereby affecting the academic pursuit of the student.

Factor 4 (Test Anxiety), accounting for 7.22% of total variance, has an almost perfect match with Ding's findings. It is not surprising that test anxiety loads so heavily for International students in light of the economic investment their families have made in their educational success. Also, because of their cultural adjustments and language difficulties, many believe that they have to study longer and harder in order to succeed academically. In many cultures outside of the U.S., academic success is praised and honored, whereas academic failure can be interpreted as bringing shame and dishonor to themselves and their families. In light of all the circumstances, it is perfectly rational to report that International students rate anxiety about test performance as an important stressor in their lives. The independent sample t-test,  $t(419) = -0.190$ ,  $p = 0.849$ , did not show a significant difference between International and American students in this factor.

Factor 5 (Financial Difficulties), accounting for 6.5% of total variance, is yet another match with Ding's study. Four items constitute this factor. Examples include, "*Changes in my financial and social status since starting school have been stressful*", "*I can not concentrate in school because I worry about my finances*", and "*I can not afford*

*to spend money for fun and recreation*". The majority of International students finance their academic careers in the U.S. on their own, while a smaller number are on government scholarships. Depending on the exchange rates of their home countries, the cost of higher education in the U.S. can be exorbitant. For instance, in the recent economic downturn, many International students from developing countries had to return home before completion of their studies here because they could not afford tuition and increased cost of living expenses. Although American students also report financial concerns, the magnitude of their financial problem is not rated as highly as those of International students. Nevertheless, the independent sample t-test,  $t(419) = -0.677$ ,  $p = 0.499$ , did not indicate any significant difference between the International and American samples on this factor.

Factor 6 (Attitude Towards Study), accounting for 6.25% of the total variance and unlike Ding's study, there are four items in this factor. The two additional items are item 5, "*Other than time spent on eating and sleeping, I spend most of my time in studying*" which, in Ding's study, was included in the factor of "Social Support". This explains that, in order to achieve their goal of coming to this country, International students are generally very responsible about their primary duty of studying. Because of the economic and social costs of academic excellence in the lives of International students, recreational activities or socialization that are unrelated to their academic interests does not distract many. This singular focus on studies alone has inadvertently worked against their ability to cope with stressors in their lives (Heikinheimo & Shute, 1986).

Interestingly, independent sample t-test showed a significant difference between International and American students on this factor,  $t(403.274) = -11.361, p = .0001$ .

Factor 7 (Social Support) accounts for 4.97% of the total variance. Only two items are included in this factor out of which item 10 is new and item 18 is common to Ding's study. Item 10, "*I feel lonely because I am separated from my family and friends and have not developed a set of new friends at school*", emphasizes that the less social an individual is, the more will be the adjustment problems. As a result such subjects are deprived of social support. In one of these early studies, Klineberg and Hull (1979) identified personal depression, homesickness, and loneliness as the major concerns of International students. Many other writers postulated the major concerns as high anxiety stress, frustration, fear, and pessimism (Dillard & Chisolm, 1983); perceived alienation and racial discrimination (Heikinheimo & Shute, 1986); loneliness (Schram & Lauver, 1988); and psychosomatic disorders (Thomas & Althen, 1989). Against this backdrop of such social and psychological problems, the support of friends and peers becomes ever important. International students who have just arrived in the U.S. are particularly vulnerable, as they have to face cultural shocks and language difficulties, while being separated from family, and before establishing a social network of friends on campus. Surprisingly, the independent sample t-test,  $t(419) = -1.209, p = 0.227$ , did not show any significant difference between International and American students.

Factor 8 (Academic Self-esteem) accounts for 4.08% of total variance and includes items 7 and 19. Item 7, "*I forgive myself easily if my test score is not as good as I expected*", is common to Ding's study but item 19, "*I feel depressed whenever I receive*



*poor score on an examination*”, is a new inclusion. Self-esteem is an important determining factor that plays a pivotal role in shaping the future personality of a student and it is inversely proportional to stress. In other words, if self-esteem is high the level of stress will be low and academic performance will be better. On the other hand, students with low self-esteem are bound to have more stress and show poor performance in school. This is especially a problem with International students who are academically strong in their home country, and because of language difficulties and other cultural adjustments, are not performing to their best while studying in the U.S. Their academic self-esteem can be severely damaged if they do not raise their academic performance readily. This stressor could present significant personal and social problems to the student. The independent sample t-test,  $t(382.8) = -0.409$ ,  $p = 0.683$ , did not indicate a significant difference between International and American students.

The EASSI was valid and reliable for use with International students beyond East Asian students as originally intended. On the basis of three factors (subscales) of Culture shock, Family pressure and Attitude toward study, the International and American samples could be discriminated clearly with International students scoring higher than their American counterparts. Because the EASSI was originally designed for East Asian students, that it was found to be valid with other International students, could mean that International students from other parts of the world share the perspectives on stress with East Asian students. Perhaps for International students in the study, their countries of origin with their unique cultural perspectives are less important than the fact that they are all international students studying in the U.S.

The similar and comparable scores on self-reported stress of the two samples are noteworthy. Demographics could be moderating the relation between stress and group membership. However, this aspect was not tested directly in this study. One explanation for the comparatively higher levels of stress reported in the American sample is that 47.7% (n=103) and 63.9% (n=138) of this group consisted of freshmen and female students, respectively (Table 9) as opposed to only 14.1% (n= 29) and 38.5% (n=79) of the International sample. The larger numbers of American freshmen are more likely to experience many of the social and academic adjustment problems typically reported by International students (Heikinhemo & Schute, 1986), which could distort the stress profile of the entire American group. In addition, the larger number of females in the American sample may have confounded the findings of the study. Studies (Schram & Lauver, 1988, Ding, 1993) have consistently reported higher levels of stress among female college students than their male peers.

### Conclusions

The following conclusions regarding the findings of the present study are offered:

1. The EASSI has acceptable alpha coefficients: socio-psychological subscale (alpha = .7329); physiological subscale (alpha = .8265); total scale (alpha = .7969), (Table 8 for alpha coefficients for eight factors).
2. Eight factors were obtained through factor analysis, accounting for 57.62% of the total variance. When all the eight factors of the current study were compared with Ding's study, (Table 7), six main factors of the EASSI were efficiently extracted: Culture Shock, Physiological Symptoms, Family Pressure, Test Anxiety, Financial

Difficulties, and Attitude Towards Study. This finding suggests that the 31-item EASSI have acceptable internal consistency of construct validity.

3. International students reported higher levels of stress according to the EASSI, and on three factors (Culture shock, Family pressure and Attitude toward study) there were statistically significant differences ( $p < .05$ ) between International and American samples.

### Recommendations

#### Recommendations for Programming

1. As the EASSI is found to be valid for use with a wider spectrum of International students beyond East Asians, the University Student Health Center as well the Counseling and Testing Center could start using this scale to identify stress among International students.
2. Formal workshops or academic programs addressing all or a few of the eight factors identified in the study could be developed to help International students understand the problem as well as learn healthier coping mechanisms. More specifically, programs addressing the stress of culture shock, family pressures, and attitude toward studies would be appropriate and timely.
3. Because of the identified need for social support and ways to cope with culture shocks, International student organizations on campus should be invited to learn more about the study findings, with an aim to design enrichment and educational programs for their members.

### Recommendations for Future Study

1. Because the majority of the International student sample came from only 10 countries, it would be interesting to design a study involving a larger sample from other countries not represented by these 10 countries. For instance, would students from Bosnia or Nigeria respond to the EASSI as students from this study? It should potentially generate a new perspective to our understanding of stress among International students.
2. An intervention incorporating the three factors (culture shock, family pressure, attitude toward study) could be designed to help International students cope with their stresses on campus and the EASSI could be used to monitor their progress over time.

APPENDIX A  
APPROVAL LETTER FOR HUMAN SUBJECTS

# UNIVERSITY<sup>of</sup> NORTH TEXAS

*Office of Research Services*

October 3, 2000

Nehalul Islam  
2216 West Hickory #3  
Denton, TX 76201

RE: Human Subjects Application No. 00-166

Dear Mr. Islam,

Your proposal titled "Assess and Compare the Stress Experienced by International and American Students Attending School in the United States at the University of North Texas," has been approved by the Institutional Review Board and is exempt from further review under 45 CFR 46.101.

Enclosed is the consent document with stamped IRB approval. Please copy and **use this form only** for your study subjects.

The UNT IRB must review any modification you make in the approved project. **Federal policy 21 CFR 56.109(e) stipulates that IRB approval is for one year only.**

Please contact me if you wish to make changes or need additional information.

Sincerely,

  
Reata Busby, Chair  
Institutional Review Board

RB:sb

APPENDIX B  
INTRODUCTORY COVER LETTER

UNIVERSITY OF NORTH TEXAS  
Denton, Texas  
COVER LETTER TO PARTICIPATE IN RESEARCH

**Title:** Assess and Compare the Stress Experienced by International and American Students Attending School in the United States at the University of North Texas

**Investigator:** Nehalul Islam (Phone: 940-566-0598) e-mail: [ni0002@unt.edu](mailto:ni0002@unt.edu).

**Advisor:** Dr. Chwee Lye Chng, PhD. Professor of Kinesiology, Health Promotion and Recreation. Advisor and Major Professor (Phone: 940-565-2651)

**UNT IRB:** Phone: (940) 565-3940

Dear Participant,

Welcome. You are being asked to participate in a research study for my Master's thesis at the University of North Texas. I have obtained approval from my advisor and other class instructors to administer the questionnaire. The questionnaire takes approximately 10 to 15 minutes. If the class instructor or you determine that there is not sufficient class time to complete the survey, you may answer the questionnaire outside of class and hand over to the person who distributed the questionnaire to you.

Your participation in this study is voluntary but your answers are extremely significant to this study. Your responses will be combined with those of other students and used for statistical analysis. To maintain confidentiality and anonymity, your name is not required. If at any time, you are uncomfortable with answering a specific question, you are not required to answer it.

By completing this survey, you will become aware of the specific sources, if there is any, of stress during your stay in the school. There is no potential risk involved with these procedures. However, if you show signs of distress after completing the survey, it will be beneficial for you to seek help from the Counseling and Testing Center as well as the Student Health Center of the University of North Texas.

If you have any questions about the research study, you are welcome to ask me at my phone number or e-mail mentioned above.

I want to take this opportunity to thank you in advance for participating in this research.

Sincerely,

Nehalul Islam

**APPROVED BY THE UNT IRB**  
FROM 10/3/00 TO 10/2/01  
*(Signature)*



APPENDIX C  
INSTITUTIONAL REVIEW BOARD REQUEST

APPLICATION FOR APPROVAL OF INVESTIGATION  
INVOLVING THE USE OF HUMAN SUBJECTS

University of North Texas Institutional Review Board  
For the Protection of Human Subjects in Research (IRB)

This application should be submitted to the Office of Research Services, Room 160, Administration Building.

1. Principal Investigator's Name: NEHALUL ISLAM

Department & Campus Address: Health Promotion, Physical Education Building

Campus Phone No.: 565 2651 Home No: (940) 566 0598 Email address: ni0002@unt.edu

2. If you are a student, provide the following:

Home Address of Student: 2216 West Hickory # 3, Denton, TX 76201

Name of Faculty Sponsor: Dr. Chwee Lye Chng Phone Ext: 565 2069

Email address of Sponsor: chng@coefs.coe.unt.edu

3. Title of Project: Assess and compare the stress experienced by International and American students attending school in the United States (UNIVERSITY OF NORTH TEXAS)

4. Total Project Period: From: Mid-October, 2000 To: April, 2001

5. Is a proposal for external support being submitted? Yes  No

Funding agency: \_\_\_\_\_

If "Yes," you must submit one complete copy of that proposal as soon as it is available and complete the following:

a) Is this a renewal application? Yes  No

6) In making this application, I certify that I have read and understand the UNT guidelines and procedures for the protection of human subjects in research. I will comply with the letter and spirit of the University policy and 45 CFR 46. I further acknowledge that I will inform the IRB of any significant changes in the protocol and will refrain from applying any protocol changes until I receive approval for said changes. **I understand that I cannot initiate any contact with human subjects before I have received UNT IRB approval.**

Signature of Principal Investigator

Date

Nehalul Islam

09-05-00

7) **Approval by Faculty Sponsor (required for all students): I affirm the accuracy of this application, and I accept the responsibility for the conduct of this research as approved by the UNT IRB.**

Signature of Faculty Sponsor

Date

Chwee Lye Chng

09/05/2000

## **Page Two of IRB Application**

(9) Subjects for this study will comprise UNT students enrolled in Fall and Spring semesters, 2000. The international nonCaucasian student population of 300 will be selected through stratified random sampling through assistance from the International Student and Scholar Office of UNT, and student groups for international students. (The International Student and Scholar Office, as well as student groups have given preliminary approval). The Caucasian American sample of 300 will make up the control group. It will be selected from students enrolled in selected classes on campus.

(10) The present study will compare the levels and types of stress, use of coping strategies, and the outcome variable of self-reported stresses between international nonCaucasian and Caucasian American students at the University of North Texas. The instrument (EASSI) used here to evaluate perceived stress has been designed and validated on a UNT sample by a former graduate student in Health Promotion, Mr. Ding Jian San, in 1993. Although it would be interesting to compare student responses across time, the major focus of this study, however, is to determine differences in perceived stress between Caucasian and nonCaucasian students at UNT in Fall and Spring semesters.

(11) By agreeing to participate in the study, students are assumed to be giving consent. However, oral and written assurances of confidentiality and anonymity will also be given before data collection has started. Permission will be sought from instructors of

courses where data collection will be done, as well as officers and advisors of student associations on campus agreeing to help with data collection.

(12) Information provided by the participants will be strictly confidential and all the documents will be kept in a locked cabinet at the Health Promotion department. Only the investigator and his academic advisor have access to these data. Under no circumstances will any individual student be personally identified. Since names and other identifying characteristics of participants will not be collected at all, there is no potential breach of confidentiality. To further ensure confidentiality, the investigator will not be in the room when participants are completing surveys. He will return later to collect completed surveys. To increase confidentiality, participants will return their completed surveys in a sealed envelope before handing them in.

(13) By completing this survey, subjects will become aware of the specific sources of stress during their stay in the school. There is no potential risk involved with these procedures and the participation of the subjects will be completely voluntary. However, if students show signs of distress after completing the surveys, they will be directed to seek help from the Counseling and Testing Center as well as the Student Health Center.

APPENDIX D  
EAST ASIAN STUDENT STRESS INVENTORY

EAST ASIAN STUDENT STRESS INVENTORY (EASSI)

DIRECTIONS: This inventory measures the stresses you have experienced in your study, work, and everyday life in the U.S. There are no right or wrong answers. Read each statement and circle the answer that best describes your experience.

1= Strongly disagree; 2= Disagree  
3= Neither disagree nor agree; 4= Agree  
5= Strongly agree

1. My lack of understanding of U.S. history and culture has caused problems in social interactions .. 1 2 3 4 5
2. I feel I am discriminated against because I am racially different ..... 1 2 3 4 5
3. I do not worry about how I pay for school ..... .. 1 2 3 4 5
4. I do not have difficulty with the teaching methods of the university ..... 1 2 3 4 5
5. Other than time spent on eating and sleeping, I spend most of my time studying ..... 1 2 3 4 5
6. Changes in my financial and social status since starting school have been stressful ..... 1 2 3 4 5
7. I forgive myself easily if my test score is not as good as I expected..... 1 2 3 4 5
8. All of my close friends are Americans ..... 1 2 3 4 5
9. If I do poorly in school, I feel I have let my family down ..... 1 2 3 4 5
10. I feel lonely because I am separated from my family and friends and have not developed a set of  
new friends at school..... 1 2 3 4 5
11. No matter how hard I study, I feel I will never do as well as others in academics..... 1 2 3 4 5
12. Examinations sometimes disturb my sleep pattern ..... 1 2 3 4 5
13. I cannot concentrate in school because I worry about my finances..... 1 2 3 4 5
14. If I do well in school, I feel that I bring great honor and pride to my family and relatives..... 1 2 3 4 5
15. When I realize the financial burden my family carries to support my education I feel  
very stressful ..... 1 2 3 4 5
16. I feel frustrated when I cannot understand exam questions even after having studied hard ..... 1 2 3 4 5
17. I cannot afford to spend money for fun and recreation (e.g. movies and restaurants ..... 1 2 3 4 5



9. If spouse is not living with you, for how long have you been separated?
- a) less than 6 months
  - b) 1 year
  - c) 1 year 6 months
  - d) 2 years
  - e) more than 2 years
10. I support myself in school primarily with money from (circle as many as possible)
- a) Position as TA or Position as RA
  - b) Scholarship
  - c) Work
  - d) Family
  - e) Other (please explain)
11. The following is an accurate picture of my financial status (circle the number that corresponds with your situation)
- |                      |   |   |                             |   |   |
|----------------------|---|---|-----------------------------|---|---|
| No financial problem |   |   | A lot of financial problems |   |   |
| 1                    | 2 | 3 | 4                           | 5 | 6 |
12. I share the apartment or house with \_\_\_\_\_people while attending school
13. I live (check one that is most applicable):
- a. On campus not with family
  - b. On campus with family
  - c. Off campus not with family
  - d. Off campus with family
14. My TOEFL score is:
- a. 401---450
  - b. 451---500
  - c. 501---550
  - d. 551---600
  - e. 601---650
  - f. Not applicable
15. My ethnicity is:
- b) Caucasian American
  - c) African American
  - d) Hispanic American
  - e) Asian American



APPENDIX E

TABLES

Table 1

Frequency and percentage of Respondents for Demographics

Variables	Group	Frequency	Percentage
Participants	International	205	48.7%
	American	216	51.3%
Gender	Male	204	48.5%
	Female	217	51.5%
International	Male	126	61.5%
	Female	79	38.5%
American	Male	78	36.1%
	Female	138	63.9%
Academic Class	Undergraduate	294	69.8%
	Graduate	127	30.2%
International	Undergraduate	123	60%
	Graduate	82	40%
American	Undergraduate	171	79.2%
	Graduate	45	20.8%
Marital Status	Married	38	9%
	Unmarried	383	91%
International	Married	21	10.2%
	Unmarried	184	89.8%
American	Married	17	7.9%
	Unmarried	199	92.1%

Table 2

Breakdown of the Top 10 countries with Students Enrolled at UNT

Country	Total Students	Percentage UNT International Population	Students Surveyed	Percentage Surveyed
India	269	13.0%	25	12.3%
Korea	257	12.4%	47	23.0%
Japan	243	11.7%	26	12.7%
Taiwan	198	9.55%	17	8.3%
China	175	8.75%	12	5.9%
Mexico	51	2.46%	4	2%
Bangladesh	49	2.45%	9	4.4%
Canada	38	1.83%	1	0.5%
Turkey	36	1.73%	8	3.9%
UK	30	1.44%	1	0.5%
<b>Total (10 countries)</b>	<b>1346</b>	<b>65%</b>	<b>120</b>	<b>73.5%</b>
Others	727	35%	85	26.5%
<b>Grand Total</b>	<b>2,073</b>	<b>100%</b>	<b>295</b>	<b>100%</b>

Total students enrolled at UNT = 27,000

Total International students at UNT = 2,073

Table 3

Reliability of Current Study for Social-Psychological Subscale on the EASSI

<b>Item</b>	<b>Scale if Item Deleted</b>	<b>Scale Variance if Item Deleted</b>	<b>Corrected Item-Total Correlation</b>	<b>Alpha if Item Deleted</b>
Q1	74.8076	120.1319	.3348	.7205
Q2	74.8504	120.6180	.2982	.7228
Q3	74.7791	134.8249	-.2051	.7597
Q4	74.0475	133.3358	-.1719	.7514
Q5	74.3278	118.0113	.4015	.7157
Q6	73.8765	119.2561	.3514	.7191
Q7	74.4394	134.5564	-.2121	.7550
Q8	74.1259	137.7246	-.2880	.7662
Q9	73.6841	118.5833	.3974	.7163
Q10	74.6223	118.3356	.3679	.7177
Q11	74.8100	120.8924	.2947	.7231
Q12	73.9050	114.6290	.4735	.7092
Q13	74.6437	117.2251	.4528	.7126
Q14	73.3397	123.1296	.2671	.7252
Q15	73.9739	116.4588	.4563	.7117
Q16	73.3397	120.8963	.3380	.7208
Q17	74.3587	118.5210	.4000	.7161
Q18	73.9572	134.9363	-.2304	.7550
Q19	73.7150	119.5043	.3851	.7176
Q20	74.8979	119.6872	.3876	.7177
Q21	74.3017	119.4254	.3876	.7174
Q22	73.9050	116.9290	.4397	.7129
Q23	73.7767	117.3929	.4622	.7124
Q24	75.0451	116.7622	.4237	.7136
Q25	75.0855	119.0070	.3781	.7176
Q26	75.4656	122.0208	.3190	.7223
Q27	75.2304	118.6111	.4319	.7148

Reliability Coefficients Alpha = .7329

Overall Reliability Coefficients Alpha = .7969

Table 4

Reliability of Current Study for Physiological Subscale on the EASSI

<b>Item</b>	<b>Scale if Item Deleted</b>	<b>Scale Variance if Item Deleted</b>	<b>Corrected Item-Total Correlation</b>	<b>Alpha if Item Deleted</b>
Q28	7.2209	10.0487	.6483	.7831
Q29	7.1876	9.7290	.7060	.7559
Q30	7.3967	9.6923	.7417	.7399
Q31	7.5036	11.2220	.5204	.8377

Reliability Coefficients Alpha = .8265

Overall Reliability Coefficients Alpha = .7969

Table 5

Variances of Factors on the EASSI for Current Study

**Factor 1 (Cultural Shock)**

(11.04 % variance)

Social interaction (Q1)  
Racial discrimination (Q2)  
American friends(Q8)  
Adapting American culture (Q20)  
Feel rejected/alienated (Q21)  
Nervous during class discussion (Q24)

**Factor 2 (Physiological symptoms)**

(10.28 % variance)

Not sleeping well (Q28)  
Headaches (Q29)  
Stomachaches (Q30)  
Sweaty hands and feet (Q31)

**Factor 3 (Family pressure)**

(7.32 % variance)

Let my family down(Q9)  
Bring honor to my family (Q14)  
Financial burden on my family (Q15)  
Disappoint parents' (Q22)

**Factor 4 (Test anxiety)**

(7.1 % variance)

Never doing as well as others (Q1 1)  
Exams disturbing sleep pattern (Q12)  
Frustrated about exam questions (Q16)  
No difficulty in teaching method (Q4 )  
Anxious before exams (Q23)

**Factor 5 (Financial difficulties)**

(6.58 % variance)

Worry about school fees (Q3)  
Financial/social status change (Q6)  
Cannot concentrate due to finances (Q13)  
Cannot spend money for recreation (Q17)

**Factor 6 (Attitude towards study)**

(6.26 % variance)

Spend most of time studying (Q5)  
Guilt for recreation and fun (Q25)  
No interest except studying (Q26)  
Family unable to adapt (Q27)

**Factor 7 (Social support)**

(4.97 % variance)

Loneliness (Q10)  
Active social life (18)

**Factor 8 (Academic self-esteem)**

(4.1 % variance)

Forgive self easily (Q7)  
Depressed about poor score (Q19)

Table 8

Alpha Coefficients and t-test Values of Eight Factors

Factors	Reliability	t-test	International Sample Mean (SD)	American Sample Mean (SD)
Culture Shock	.5609	t (419) = -11.078, p = .0001**	2.76 (.57)*	2.16 (.55)
Physiological Symptoms	.8265	t (419) = .065, p = 0.948	2.43 (1.01)	2.44 (1.05)
Family Pressure	.6963	t (419) = -2.460, p = 0.014**	3.58 (.82)	3.38 (.85)
Test Anxiety	.6136	t (419) = -.190, p = 0.849	3.30 (.76)	3.28 (.80)
Financial Difficulties	.1500	t (419) = -.677, p = 0.499	2.81(.63)	2.77 (.69)
Attitude toward Study	.6887	t (403.274) = -11.361, p= .0001**	2.58 (.76)*	1.79 (.65)
Social Support	.5200	t (419) = -1.209, p = 0.227	2.95 (.68)	2.87 (.69)
Academic Self Esteem	.4192	t (382.8) = -0.409, p = 0.683	3.14 (.78)	3.11 (.60)

\* Significant mean score

\*\* Significant p-value

Table 9

Comparison of Demographic Variables

Variables	International			American		
	<25	>25		<25	>25	
Age	119	86		184	32	
Gender	Male	Female		Male	Female	
	126	79		78	138	
Class	Undergraduate	Graduate		Undergraduate	Graduate	
	123	82		171	45	
Major	Computer-related	Non-computer		Computer-related	Non-computer	
	99	106		21	185	
Marital	Married	Unmarried		Married	Unmarried	
	22	183		17	199	
Financial Difficulties	No	Moderate	Severe	No	Moderate	Severe
	39	106	60	62	99	55

Table 6

Comparison of Factor Loadings

	<b>Current</b>	<b>Ding</b>
<b>Factor 1 (Cultural Shock)</b>		
(% variance 11.04)		
Social interaction (Q1)	.698	.73777
Racial discrimination (Q2)	.647	.49575
American friends(Q8)	-.629	
Adapting American culture (Q20)	.708	
Feel rejected/alienated (Q21)	.528	.55705
Nervous during class discussion (Q24)	.756	.49673
<b>Factor 2 (Physiological symptoms)</b>		
(% variance 10.28)		
Not sleeping well (Q28)	.762	.79613
Headaches (Q29)	.803	.80136
Stomachaches (Q30)	.819	.58467
Sweaty hands and feet (Q31)	.650	.82134
<b>Factor 3 (Family pressure)</b>		
(% variance 7.32)		
Let my family down(Q9)	.787	.57077
Bring honor to my family (Q14)	.666	.84722
Financial burden on my family (Q15)	.527	
Disappoint parents' (Q22)	.605	
<b>Factor 4 (Test anxiety)</b>		
(% variance 7.1)		
Never doing as well as others (Q1 1)	.436	
Exams disturbing sleep pattern (Q12)	.608	.59666
Frustrated about exam questions (Q16)	.642	.67327
No difficulty in teaching method (Q4)	.523	.46794
Anxious before exams (Q23)	.634	.76007
<b>Factor 5 (Financial difficulties)</b>		
(% variance 6.58)		
Worry about school fees (Q3)	-.764	.66345
Financial/social status change (Q6)	.586	.36667
Cannot concentrate due to finances (Q13)	.498	.72117
Cannot spend money for recreation (Q17)	.527	.64013
<b>Factor 6 (Attitude towards study)</b>		
(% variance 6.26)		
Spend most of time studying (Q5)	.505	
Guilt for recreation and fun (Q25)	.449	.50685
No interest except studying (Q26)	.797	.76298
Family unable to adapt (Q27)	.578	



Table 7

Comparison of Means and Standard Deviations for Six Factors on the EASSI

Variables	International		American	
	Mean	SD	Mean	SD
<b>Factor 1 (Cultural Shock)</b>				
(11.04 % variance)				
Social interaction (Q1)	2.93	1.13	1.89	.97
Racial discrimination (Q2)	2.91	1.13	1.83	1.07
American friends(Q8)	2.27	1.17	3.84	1.21
Adapting American culture (Q20)	2.80	.92	1.83	1.03
Feel rejected/alienated (Q21)	3.15	1.07	2.67	1.11
Nervous during class discussion (Q24)	2.85	1.27	1.50	.88
<b>Factor 2 (Physiological symptoms)</b>				
(10.28 % variance)				
Not sleeping well(28)	2.58	1.26	2.52	1.35
Headaches (Q29)	2.51	1.26	2.65	1.32
Stomachaches (Q30)	2.35	1.21	2.40	1.31
Sweaty hands and feet (Q31)	2.32	1.20	2.21	1.28
<b>Factor 3 (Family pressure)</b>				
(7.32 % variance)				
Let my family down(Q9)	3.63	1.17	3.42	1.17
Bring honor to my family (Q14)	3.88	1.06	3.85	.96
Financial burden on my family (Q15)	3.51	1.17	2.96	1.23
Disappoint parents' (Q22)	3.31	1.20	3.30	1.25
<b>Factor 4 (Test anxiety)</b>				
(7.1 % variance)				
Never doing as well as others (Q1 1)	2.25	1.15	2.53	1.24
Exams disturbing sleep pattern (Q12)	3.48	1.35	3.13	1.33
Frustrated about exam questions (Q16)	3.69	1.14	4.03	1.00
No difficulty in teaching method (Q4)	2.90	1.13	2.79	1.13
Anxious before exams (Q23)	3.42	1.14	3.43	1.14
<b>Factor 5 (Financial difficulties)</b>				
(6.58 % variance)				
Worry about school fees (Q3)	2.24	1.35	2.60	1.42
Financial/social status change (Q6)	3.35	1.15	3.31	1.29
Cannot concentrate due to finances (Q13)	2.75	1.15	2.38	1.17
Cannot spend money for recreation (Q17)	2.91	1.18	2.78	1.17
<b>Factor 6 (Attitude towards study)</b>				
(6.26 % variance)				
Spend most of time studying (Q5)	3.40	1.14	2.38	1.08
Guilt for recreation and fun (Q25)	2.48	1.21	1.78	1.04
No interest except studying (Q26)	2.04	1.09	1.45	.83
Family unable to adapt (Q27)	2.41	1.10	1.56	.92

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