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THE ROLE OF HARDINESS AND PERCEPTIONS OF SOCIAL SUPPORT IN THE EARLY COLLEGE ADJUSTMENT OF INTERNATIONAL STUDENTS

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ABSTRACT

THE ROLE OF HARDINESS AND PERCEPTIONS OF SOCIAL SUPPORT IN THE EARLY COLLEGE ADJUSTMENT OF INTERNATIONAL STUDENTS

By

S. Ali Mirzadeh

Change is a constant, though often gradual, characteristic of most environments. Environmental change is often precipitated by relational factors such as divorce, deaths in the family, or incarceration; by social factors such as crime, riots, and revolutions; by economical factors such as recessions and unemployment, and by natural factors such as earthquakes and floods. It can also be produced by experimental manipulations. Occasionally, however, significant and rapid change is induced through the insertion of an organism into a new environment. International students are an example of a naturally occurring population that experiences a high degree of environmental change in just such a manner.

Change in life circumstances has been demonstrated to elicit a stress reaction in some individuals. Research in the past twenty years has consistently demonstrated a link between exposure to stress and the development of a variety of physical and psychological symptoms. This association, though significant, is not universal. The generally cited correlation index is of the order of 0.30. In the past two decades, the roles of a range of individual differences that purportedly influence the stress-illness link have been examined. Hardiness and perceptions of social support have emerged in the literature as two such factors.

According to the literature, the prevalence of physical and psychological symptoms among international students is similar to the reported rates of these symptoms among other stress-exposed groups. This implies that although a portion of the international student population exhibits vulnerability to the development of stress related symptoms, another segment remains relatively symptom free. As well as provide descriptive data on the health status of new international students enrolled in a large mid-Western university, this study examined the roles of hardiness and perceptions of social support in the adjustment of this population to environmental change.

This dissertation is dedicated to all Iranian students who left our home country in pursuit of knowledge in the years between 1975 and 1979. As we each stepped onto the plane at Mehrabad, little did we know there was no coming back.

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Those who complete the requirements of a doctoral degree discover, both directly and vicariously, that the role of the advisor is the single most influential determinant of outcome. In my own case, I was blessed with an advisor who personifies the often discussed but far less often observed personal qualities of genuineness, warmth, and unconditional positive regard. Professor Robbie Steward, by her own human-centered example, exposes the fallacy of a task-centered approach to life.

This dissertation is yet more evidence in support of the belief that no work is produced by a single author. The original idea of this project was conceived and developed with the generous and expert guidance of professor Frederick G. Lopez. During the latter stages of the project my work was immeasurably facilitated by Professor Kenneth G. Rice's willingness to remedy the considerable deficits in my statistical skills. Throughout the project, I was helped, assisted, encouraged, advised, inspired, stimulated, and ,most essentially, prodded by my wife Susan Doyle-Mirzadeh. From permitting me to express (and thus think through) half-baked ideas, to most ably helping me in the coding, data entry, and data analytical stages she graciously conspired with me in my delusion that things were always under control. In her willingness to proof-read the various drafts of the manuscript she exhibited the same zeal and commitment to the plight of the distressed that are the hallmarks of her work with the severely mentally ill. Finally, I wish to express

my sincere gratitude to the psychology staff at Wright-Patterson Medical Center and in particular Lt. Col. (Dr.) Ken Dobbins for graciously providing me with time and support during my clinical residency year.

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CHAPTER 1

INTRODUCTION

Change in one or more areas of a person's life has been cited as a major source of stress (Brett, 1980; Brown & McGill, 1989; Hinkle, 1974; Holmes & Rahe, 1967; Miller & Sollie, 1985; Rahe & Arthur, 1978; Zeiss, 1980). Life change has been defined as "any noticeable alteration in one's living circumstances that requires re-adjustment" (Weiten & Lloyd, 1994, p. 73). Empirical work in this area has consistently shown that people are more likely to exhibit physical and psychological problems concurrent with and/or subsequent to a major life change (Dohrenwend & Dohrenwend, 1974).

Soon after the initial demonstrations of the relationship between stress and illness, empirical attention was focused upon explaining the repeated observation that many individuals maintain good health even when subjected to prolonged exposure to stress (Adler & Matthews, 1994; Hinkle, 1974; Holohan & Moos, 1985). Accordingly, investigators have sought to study individual differences that might explain why some people are more vulnerable to the deleterious effects of stress than others (e.g., Cohen & Edwards, 1989; Contrada, Leventhal, & O'Leary, 1991; Holroyd & Coyne, 1987; Suls & Rittenhouse, 1987). In the late seventies, Suzanne Kobasa observing the small but significant correlation between stress and illness, began to conceptualize and investigate personality factors that according to a set of theoretical reasons, she believed, explained some of the variation in the stress-illness

relationship.

Kobasa's work was grounded in at least two theoretical domains. First, her conceptualization tendencies were based upon her own and her graduate school advisor, Salvatore Maddi's allegiance to an existential theory of personality (Kobasa & Maddi, 1977). A basic tenet of existential personality theory is that the development of a healthy personality is a function of the capacity to stand on one's own convictions (May, 1969c, p.243). Furthermore, according to this theory, an individual's ability to mobilize his or her resources in order to achieve personally meaningful goals (a concept known as "will" or "intentionality") is also an important factor in the development of a healthy personality (May, 1939/1967a). Second, Kobasa's work was influenced by Richard Lazarus' (1966) formulation of stress as a reaction mediated by an individual's appraisal of environmental change. More specifically, Lazarus conceived of the stress reaction, a term first coined by Henry Selye in 1956, as a physiological response to the perception of a threat to one's well-being. Whether or not an event was perceived as threatening was based upon personal belief systems (Lazarus, 1966). Lazarus' work was partially based upon Magda Arnold's (1945) theory which suggested that organisms instinctively and rapidly appraise their environments "as a fundamental act of perception, producing tendencies to act" (cited in Fiske & Taylor, 1991, p. 436). In a refinement of Arnold's work, Lazarus (1966) introduced the concepts of primary appraisal, evaluation of the relevance of a stimulus, and secondary appraisal, evaluation of available coping resources.

In line with these theoretical underpinnings, Kobasa (1979) predicted that

psychologically "hardy" individuals would be less vulnerable to the harmful effects of stress. Principle component anaylses conducted subsequent to a series of studies in which she compared personality characteristics of hardy individuals with those exhibiting vulnerability to stress, revealed a set of three personality factors which together explained a significant portion of the variation in the adjustment of her sample to stress. She, therefore, defined hardiness in terms of these three personality characteristics which she labeled as commitment, challenge, and control. Commitment is defined as the "tendency to involve oneself in (rather than experience alienation from) whatever one is doing or encounters" (Kobasa, Maddi, & kahn, 1982, p. 169). Challenge is defined as a "belief that change rather than stability is normal in life and that the anticipation of changes are interesting incentives to growth rather than threats to security" (Kobasa et al., 1982, pp. 169-170). Control is defined as a "tendency to feel and act as if one is influential (rather than helpless) in the face of the varied contingencies of life" (Kobasa et al., 1982, p. 169). Maddi and Kobasa (1984) have suggested that hardiness is an acquired personality characteristic, and as such is subject to change.

Although the current empirical status of hardiness will be reviewed elsewhere in this manuscript, it is appropriate to state here that since its introduction the hardiness construct has received a considerable amount of empirical attention. Kobasa's own initial work demonstrated the influential role of hardiness in the stress-illness link (Kobasa, Maddi, & Courington, 1981; Kobasa, Maddi, & Kahn, 1982; Kobasa, Maddi, & Puccetti, 1982b; Kobasa & Puccetti, 1983). In a review of the literature, Funk

(1992) found that the role of hardiness had been studied in such diverse areas as cardiovascular reactivity, development of depressive symptoms, burnout, and the levels of immunoglobulin-A in the breast milk of nursing mothers; and among such populations as nurses, teachers, single parents, attorneys, and bankers. Although the bulk of empirical findings have been consistent with Kobasa's own discoveries, in recent years several conceptual and methodological criticisms have been leveled against this line of research (Benishek, 1994; Funk & Houston, 1987; Hull, Van Treuren, & Virnelli, 1987). These criticisms will be reviewed in chapter 2.

A parallel line of research has examined the role of social support as a mitigating factor in the experiencing of harmful effects of stress (Anotonsovsky, 1979; Cassel, 1976; Gentry & Kobasa, 1984; Johnson & Sarason, 1979; Leavy, 1983; Rabkin & Streuning, 1976). The possible role of social support in psychological health was first discussed within the sociological literature (Mechanic, 1974). Early empirical work in this area consisted mainly of studying the role of social support as a mitigating factor against stress-related physical and psychological disorders (e.g., Cassel, 1976; Cobb, 1976; Dean & Lin, 1977). The definition of social support has been the subject of some disagreement (Gentry & Kobasa, 1984). House (1984), for example, conceived of social support as a "flow of one or more of four things between people" (cited from Gentry & Kobasa, 1984, p. 93). These consisted of emotional support (e.g. expressions of affection, interest, and concern), appraisal support (e.g. helping people think through their problems and generate solutions), informational support (e.g. offer advice and new coping strategies), and instrumental support (e.g. offering a

place to stay, lending money, etc.). Recent studies, however, have tended to operationalize social support in terms of the individual's perceptions of the availability and utility of such support (Cohen & Hoberman, 1983; Gore, 1978). With some exceptions (e.g. Kobasa & Puccetti, 1983) the main weight of empirical evidence supports the view that absence of social support is associated with increased psychological distress. Less certain, however, is the buffering properties of social support against the adverse effects of stress (Leavy, 1983).

Although research with populations such as those reported by Funk (1992) is of general interest to counseling psychologists, research concerning the adjustment of college students is of particular interest because a) counseling psychologists routinely help normal functioning individuals who are experiencing mild, moderate, or severe distress in response to life change; b) this line of research places emphasis upon person-environment interactions, rather than the exclusive focus on either the person or the environment; and c) counseling psychologists are often involved in helping relationships with both domestic and international students who have, in pursuit of educational goals, geographically relocated.

As well as representing a large source of funds for various institutions of higher education in Europe and the United States (Annual Report of the Office for International Students and Scholars, 1996), international students, by and large, represent the intellectual and social elite of their countries and frequently return to positions of authority and influence (Hull, 1978). In terms of size, international students continue to evolve into a significant segment of the U.S. college student

population. Torrey (1970) reported that whereas in 1930 the number of international students in the U.S. was less than 10,000, by the end of the war this number had already climbed to about 20,000, and it exceeded 100,000 in 1968, representing students from over 150 countries. More recent data indicates that over 416,000 international students were enrolled in U. S. colleges and universities in 1991 (U.S. Dept. of Education, 1993 as reported in Yang & Clum, 1995). Furthermore, 11% of all master's degrees and 23.4% of all the doctoral degrees awarded by U.S. colleges and universities are earned by international graduate students (U.S. Dept. of Education, 1993 as reported in Yang & Clum, 1995).

Studies addressing the overall health status and the prevalence of stress related symptoms among international students have been rare and flawed. The meager available data have been equivocal: studies have variably described this population as one particularly vulnerable to the development of a range of physical and psychological symptoms (e.g., Sam & Eide, 1991; Furnham & Trezise, 1983), or alternatively as a resilient population, which in many ways, may be better adjusted than its domestic cohort (e.g., Parr, Bradley, & Bingi, 1992; Allen & Cole, 1987). Studies, however, have not attempted to explain this variation. Indeed the present author was unable to locate an article which gave a systematic review of the available literature. Few studies have focused on the adjustment characteristics of international students in the early stages of their sojourn. This is of particular interest in this study since the stressors associated with this early stage are almost exclusively due to environmental changes, whereas stressors present during later stages may be due to such factors as

pressures to conform or perform, conflicts, frustration, etc. Finally, no studies have attempted to explain the variation in international student health by investigating personality factors.

Problem Statement

The constant increase in the size of the international student population and the paucity of empirical data regarding the health status of this population in their new environment have created a need for a more systematic investigation of this area. There is also a need to examine, in this population, the role of factors that have been demonstrated to influence the stress-illness association in domestic samples. Given the current state of uncertainty about the role of individual differences in the association between stress and illness, there is a need for the kind of data that might allow for added conceptual and empirical clarity. The present study will address some of the gaps in the literature concerning the adjustment of international students by examining the role of factors, such as hardiness and perceptions of social support. Specifically, the primary objectives of this study are to: a) assess the adjustment of new international students in terms of their physical and psychological health; b) examine the role of hardiness in the adjustment of new international students; c) examine the role of perceptions of social support in the adjustment of new international students; d) examine the combined effects of hardiness and stress in the adjustment of new international students; e) examine the combined effects of perceptions of social support and stress in the adjustment of new international students; and f) assess the possible of effects of such demographic factors as language and ethnicity upon the

adjustment of new international students to their new environments.

Should the results of this study reveal high prevalence of physical and psychological distress among new international students, and should the results of this study support the view that individual differences explain a significant amount of the variation in the health status of this population, research can then turn to the creation of empirically based programs designed to facilitate the adjustment of new international students. In case, however, that the results of this study reveal low prevalence of physical and psychological distress among this population, future research can focus on comparing the characteristics of this apparently stress-resistant population with other stress-exposed groups who have traditionally not fared as well. Finally, should the results of this study reveal high prevalence of physical and psychological distress among this population, and should the results of this study indicate an insignificant role to hardiness and perceptions of social support, research can then turn to the examination of the role of other variables, such as neuroticism, self-esteem, or openness to experience, in the stress-illness link of this population.

CHAPTER II

REVIEW OF THE LITERATURE

The Health Status of International Students

Travel to intellectually dominant countries by scholars and students has been a constant feature of scholarly life since the time of the Greeks (Pruitt, 1978). Indeed, as Wehrly (1988) points out such universities as Paris and Salerno have been enrolling international students since the 12th century. The United States has received and hosted students from other countries since 1784 (Hendricks & Skinner, 1977). According to Marion (1986), the appeal of the U.S. as a popular educational destination is based upon a) the advanced state of science and technology; b) English as the language of instruction; c) the generally high quality of instruction; and d) social and political stability.

With a few notable exceptions, the subject of the health and adjustment of international students began to draw empirical attention in the early sixties. At the 1961 meeting of the American College Health Association, Lyle Ward described his observation of a set of physical and psychological symptoms prevalent among international students. These symptoms included somatic complaints, adoption of a passive and withdrawn attitude, and a marked reluctance to communicate. In more severe cases, according to Ward, the symptoms mentioned above were accompanied by a general disheveled appearance along with a restriction of physical movements. Although these observations are consistent with signs and symptoms of clinical depression, Ward applied the label of Foreign Student Syndrome to this cluster of

symptoms.

Ward's observations were preceded by Lysgaard's (1955) U-curve hypothesis. Though not exclusively intended for the international student population, the U-curve hypothesis suggests that the process of adjustment of a sojourner to his or her new environment is described, graphically, by a curve resembling the letter U: a sojourner's initial experiences in his or her new environment are often pleasant and exciting. This state of affairs, however, begins to deteriorate as the sojourner encounters difficulties arising out of his or her unique situation. Finally, as the sojourner expands his or her repertoire of adaptive skills, his or her adjustment along with his or her sense of well-being improves. In a continuation of Lysgaard's work, Oberg (1960) proposed the term "culture shock" to describe a series of four stages that, according to his observations, people abroad experienced. Oberg suggested that the initial period of a sojourner's experience, the "Honeymoon" stage was characterized by a sense of excitement and hopeful anticipation. This short lived state of affairs is followed by a period of "crisis" when the realities and nuances of the new environment lose their sense of wonder and are instead, are perceived by the sojourner as hurdles with which the sojourner must grapple and, in order to adjust, overcome. Oberg offers a list of these hurdles, or potential sources of stress: racial discrimination, language difficulties, housing difficulties, separation reactions, financial problems, dietary differences, and loneliness. During the third, or the "Recovery" stage, the sojourner's initial affective reactions begin to give way to a sense of purposeful mobilization of psychological and physical resources. Finally, Oberg suggests that a sojourner's recovery from culture

shock is concluded during the "Adjustment" stage.

In a review of empirical literature on the viability of the U-Curve hypothesis Church (1982), concluded that the evidence for the U-Curve hypothesis was "weak, inconclusive, and overgeneralized" (Church, 1982, p. 571). More recently, Nash (1991) has suggested that the failure to find empirical support for the U-Curve is more due to the methodological flaws in the studies than the validity of the U-Curve concept. The main thrust of Nash's criticism is directed towards sampling procedures employed by the early studies. First, Nash suggests that the U-Curve was intended to describe neither the experiences of tourists (since, for obvious reasons, this group is never obliged to adjust to the demands of the new environment), nor those who terminate their stay prematurely. Second, Nash claims that the cross-sectional designs used by the earlier investigators simply do not yield the kind of data necessary for the accurate description of the course of individual sojourner's experience in his or her new environment. This criticism was echoed by Zheng and Berry (1991), who also proposed that longitudinal data, collected through more sensitive instruments, were necessary for the definitive testing of the U-Curve hypothesis.

In his own study of the U-Curve hypothesis, Nash (1991) employed a longitudinal design to investigate the course of adjustment of a group of American college students enrolled in a "well-established Junior-Year-Abroad program" (Nash, 1991, p.284). His control group consisted of a group of students enrolled in the same university, but who were not making the trip abroad. Nash's findings did not support the U-Curve hypothesis: there were no significant differences between the

psychological well-being of the students studying abroad and those studying at home. In his discussion of the results, Nash questions the representativeness of his sample in that their stay abroad was fully coordinated and organized by the staff of the Junior-Year-Abroad program to such a degree that the students were either not obliged to adjust and adapt to their new environment, or any adjustments were greatly facilitated.

In line with Ward's observation and description of the Foreign Student Syndrome, Ray (1966), presented data suggesting that the hospital admission rates among the international students enrolled at a major mid-Western university were significantly higher than those of the domestic students. She also presented data indicating that her figures were in line with those reported from other universities including those in the United Kingdom. Nearly two decades later, Gunn (1985) described the effects of education abroad on international student health as so grave as to be worthy of immediate attention and intervention by the World Health Organization. Largely as a response to Gunn's claims, Allen and Cole (1987) reviewed the medical charts of a group of international students enrolled in Australian universities and compared them to those of a group of Australian students enrolled in the same universities. Their results did not yield any significant differences in the severity or nature of health complaints between the two groups. In fact, interestingly, this study yielded a borderline significant indication that the international students may enjoy better health than their domestic cohort. Among the most serious limitations of this study was its use of charts as a source of data: it is possible that, due to cultural factors, the international student group was more reluctant to seek health care than its

domestic cohort (Furnahm & Trezise, 1983). Furthermore, the group of international students used in this study consisted mainly of students from Singapore, Malaysia, and Hong Kong; countries which, by virtue of their historical ties to the British Commonwealth, share a number of cultural and linguistic characteristics with Australia.

The role of cultural differences in the adjustment of international students was hypothesized, though not investigated, by Akka (1967). He predicted that higher levels of cultural discrepancy between that of the international student and that of the host nation would be associated with higher levels of pathology among this population. As examples of areas of cultural discrepancy, Akka cited difficulties in communication arising from both language skills and norms of interpersonal interaction, family ties, academic problems, social behavior, and religion.

The bulk of the empirical evidence has been supportive of Akka's prediction (e.g., DeArmond, 1983; Domingues, 1970; Miller & Harwell, 1983; Zurin & Rubin, 1967; and Sam & Eide, 1991, Klineburg & Hull, 1979; Wehrly, 1986). Specifically, in a survey of the health complaints of international students enrolled at 27 large universities across the U.S., Brislin (1981), found that students from European countries, and students with better language skills reported fewer health concerns as compared with students from Third World countries, and students with poorer language skills. In a review of the literature, Church (1982) found that nationality and prior travel experience were important variables in predicting the adjustment of international students. Some research, however, has failed to reveal any such relationship (e.g. Furnham and Trezise, 1983). Though the results of Furnham and

Trezise's study did indicate a significantly higher level of psychological disturbance among international students as compared to domestic students, the within group analysis of the international student data according to nationality, did not indicate any significant differences.

In a study of the mental health of international students enrolled in Taiwanese universities, Ko (1979) administered a questionnaire designed to measure such variables as suspiciousness, hypochondriacal tendencies, asocial tendencies, self-esteem, feelings of inferiority, anxiety, obsessive-compulsive tendencies, psychosexual inhibition, hostility, ego-strength, dependent tendencies, and life satisfaction. Ko compared the results obtained from his sample with that of its domestic cohort. His results indicated significantly higher levels of suspiciousness, feelings of inferiority, obsessive-compulsive tendencies, psychosexual inhibition, and significantly lower levels of satisfaction with life among the male international students. Among the female international students, Ko's results indicated only significantly elevated rates of suspiciousness, obsessive-compulsive tendencies, and dependent tendencies. It is important to note that Ko obtained these results even though his sample of international students, while from abroad, consisted of ethnic Chinese students sharing much cultural and linguistic characteristics with their host country. An obvious limitation of Ko's study was its failure to assess the pre-departure levels of these characteristics among his sample.

Ko's findings were replicated in a study by Oei and Notowidjojo (1990). They compared the effects of life change in the adjustment of international students enrolled

in an Australian university with that of a group of Australian students. Their results indicated that international students with lengths of stay greater than one year were significantly more likely to experience clinical depression as compared to either the domestic students or newly arrived students. This finding, though cross-sectional in nature, can be construed as supportive of Lysgaard's U-curve hypothesis.

Miller and Harwell (1983), conducted a survey of the health problems of international students enrolled at a small mid-Western university. The results of this study indicated that fatigue, homesickness, headaches, colds, and insomnia were the most common health problems among the sample. This study did not employ a control group of domestic students, nor did the investigators compare their results with the prevalence rates of these complaints on the campus as a whole and so no conclusions regarding the significance of the findings can be drawn.

Other authors have conducted similar, though more internally valid studies. Ebbin and Blankenship (1986) for example, reviewed and compared the medical records of both international and domestic students enrolled at a major urban university located in western United States between 1980 and 1983; a time span during which this university, reportedly, had the highest rate of enrollment of international students among U.S. colleges and universities. As well as reporting the top 27 presenting problems of international students (the top five being common cold, pharyngitis, acne, sprain/strain, and patient education, respectively), this study found that the prevalence of such potentially stress related disorders as chest pain, cough, gastritis, back pain, anxiety and depression (e.g., Dohrenwend & Dohrenwend, 1974) was significantly

greater among international students as compared to their domestic cohort. The latter finding was further supported when these investigators conducted a survey of 476 college health center directors (Ebbin & Blankenship, 1988). A response rate of 38% to the survey, from institutions with an average enrollment of 11,120 and a minimum international student enrollment of 200 yielded results that were generally in line with these authors' earlier findings from their 1986 study: whereas the prevalence of such potentially stress-related disorders as anxiety, gastritis, headache, constipation, insomnia, depression, chest pain, abdominal pain, and peptic ulcers was found to be significantly higher among the international students; the prevalence of other stress-related disorders such as hypertension, low back pain, amenorrhea, and neurodermatitis was found to be lower among the international students enrolled in the surveyed institutions as compared to their domestic cohort.

A prevalent methodological issue in this literature is that most investigators fail to assess the international students' pre-departure or its immediate post-arrival health. Observing this problem, Sam and Eide (1991) conducted a survey designed to assess the mental health of international students taking into account their pre-departure symptoms. The participants in this study consisted of all international students enrolled at a Norwegian university. In addition to a demographic questionnaire, the survey package consisted of a an inventory of adjustment and health derived from Goldberg's (1972) General Health Questionnaire and Derogatis' (1973) Symptom Check List. A return rate of 67%, yielded 400 completed packages from a wide range of students including 118 females, 190 males, and 50 nationalities. Results of this study included

the following. First, a t-test of the means of the students' self evaluation of their current and prior health indicated a significant deterioration of this group's sense of well-being. More specifically, analysis of responses to the inventory revealed significant change in 21of the 32 items. There were significant increases in the levels of nervousness, chest pains, suspiciousness, guilt, loneliness, sadness, worry, anhedonia, heart palpitations, insomnia, feelings of worthlessness, and fatigue; as well as poorer appetite. Second, it was found that four factors, paranoia, anxiety, depression, and somatic complaints, accounted for more than 45% of the variance. All four syndromes exhibited significant elevations in their pre and post-arrival levels. Finally, their results indicated that higher levels of mental health were found among the Scandinavian and North American students, whereas being single or married but living away from spouse, being younger, being female, being an undergraduate, being Asian, and being Arabic speaking were all found to be associated with deterioration of mental health.

Overall, research on the health status of international students tends to suffer from the following limitations. First, the lack of control groups in these studies severely limits the range of conclusions that could drawn. Second, a large number of these studies suffer from sampling problems that severely limit the generalizability of their results. These include narrow range of nationalities represented; the presence of high levels of similarities between the host culture and the cultural characteristics of the sample; and the problems that often plague survey data e.g. volunteer bias. Third, with the exception of the Sam and Eide (1991) study, most studies designed to assess the health status of international students fail to take into account pre-arrival

symptoms.

The Relationship Between Stress and Health

The nature of the relationship between mind and body has been of interest to philosophers since antiquity (Contrada, Leventhal, & O'Leary, 1991). Accounts of charismatic individuals (e.g. Indian fakirs, faith healers, shamans, voodoo practitioners) capable of influencing physiological functioning through psychological manipulations are widely available. Walter Cannon (cited in Dohernewend & Dohrenwend, 1984, p. 2) was among the first scientists to undertake a systematic investigation of the effects of psychological stress upon physiological functioning. He suggested that vital bodily organs would be irreparably damaged if the autonomic nervous system was maintained in a highly aroused state through prolonged psychological stress. Hans Selye's (1936) introduction of the general adaptation syndrome allowed for more clarity in Cannon's assertions by suggesting that prolonged exposure to stress leads, inevitably, to the exhaustion of physical and psychological defensive resources. This exhaustion leaves the organism vulnerable to a variety of physical and psychological disorders, and in severe cases it can be fatal. It is further suggested that although the experiencing of sudden and severe stressors that result in fatality are nowadays relatively rare, certain characteristics of modern life do lead to a sustained state of autonomic arousal characteristic of a mild stress reaction. This type of a mild stress reaction has been associated with poor academic performance (Lloyd, Alexander, Rice, & Greenfield, 1980); insomnia (Hartmann, 1985); nightmares (Cernovsky, 1989); sexual difficulties (Malatesta & Adams, 1984); drug abuse

(krueger, 1981); and anxiety and depression (Weiten, 1988). Holmes and Rahe (1967) were among the first investigators to cite changes in life circumstances as sources of this kind of mild stress reaction.

More recently, researchers have been successful in inducing an array of illnesses in laboratory animals through exposing them to severe stress. Sklar and Anisman (1979) for example, found that mice that were administered electric shock, after having had cancerous cells surgically planted into them, were more likely to grow tumors more rapidly and die as compared to those animals with cancerous cells that were not administered electric shock.

Studies with humans have, for obvious reasons, been of a quasi-experimental nature. Although these designs lack the degree of internal validity necessary for strong causal statements, they do, nevertheless, allow the investigator to make causal claims of a somewhat weaker kind. Kasl and Cobb (1970) for example, studied a group of workers beginning two months before their jobs were to be terminated and for two years subsequent to loss of employment. Their design included a control group consisting of men in similar occupations who did not lose their jobs. For the group of workers who lost their jobs, the results indicated elevated blood pressure both with anticipation of job loss and after termination of employment. No such rise in blood pressure was found in the control group. The inclusion of a control group adds to the internal validity of this study. Interestingly, however, the authors do not account for those workers who lost their jobs but did not experience a rise in blood pressure.

Jemmott and Magloire (1988), examined the effects of academic stress upon

salivary concentrations of Immunoglobulin A (IgA) among 15 healthy undergraduates 5 days before, during, and 14 days after their final exams (IgA is an immune system protein responsible for the protection of mucus membranes from pathogens). Their results supported the hypothesis that academic stress can temporarily suppress immune system activity through reducing the concentrations of IgA in the saliva. A strength of this study was its collection of data regarding the levels of subjects' social support. These data were used to account for within sample differences in the concentrations of IgA. Other studies have established a link between chronic stress and onset of such diseases as the common cold (Totman, Kiff, Reed, & Craig, 1980), vaginal infections (Williams & Deffenbacher, 1983), cardiovascular disease (Rosengren, Tibblin, & Wilhelmsen 1991); infectious disease (Stone, Reed, & Neale, 1987); and pregnancy complications (Pagel, Smilkstein, Regen, & Montano, 1990).

Studies have also established an association between chronic exposure to stress and psychological symptoms. In a widely cited study, Seligman (1974) initially exposed a group of dogs to inescapable electric shock. He subsequently found that these dogs were less likely to learn to escape the electric shock in situations from which escape was possible. He cited this kind of "learned helplessness" as a possible antecedent of depression. More recently, Bodnar and Kielcot-Glaser (1994), using a longitudinal design, discovered significantly higher prevalence of depression among caregivers of persons with Alzheimer's disease as compared to a control group..

Although the existence of a stress-illness link has been consistent and significant, it has rarely been found to be greater than .30 (Holohan & Moos, 1985).

The usual range of correlations has been reported as between 0.20 and 0.40 with a standard deviation that is about eight times the mean (Rabkin & Struening, 1976a, 1976b). This finding has provided the impetus for researchers to explain these within group variations through the investigations of personality factors.

The Role of Hardiness in the Stress-Illness Link

The role of hardiness as a mitigating factor in the stress-illness link was first studied by Suzanne Kobasa in the course of her doctoral dissertation research (Kobasa, 1979). In this seminal work, Kobasa predicted that individuals high in commitment, challenge, and perceived control would be less vulnerable to the deleterious effects of life change. Her results significantly supported this prediction. An immediate criticism of Kobasa's findings was that data from her first study did not include information regarding individual levels of hardiness prior to exposure to stress. This was deemed important because in order to demonstrate that hardiness acted as a buffer against the adverse effects of stress, it was essential to show that symptomatic individuals were low in hardiness prior to exposure to stress.

Kobasa acknowledged the need for a prospective study to determine the directionality of her findings. She and her colleagues published this prospective study in 1982 (Kobasa, Maddi, & Kahn, 1982). Their results confirmed that hardiness acted prospectively as a buffer against the harmful effects of stress. (Kobasa et al., 1982, p. 174).

Since Kobasa's introduction of hardiness, other researchers have studied its role in the stress-illness link of other populations. Rhodewalt and Zone (1989) for example,

conducted a survey study of adult women to examine whether psychological hardiness acted as a buffer against stressful life change. Their results indicated a significant difference between hardy and nonhardy subjects' appraisal of their life events as either negative or positive. Hardy and nonhardy women also differed in their reports of the average amount of adjustment required for each event. Although Rhodewalt and Zone discovered an interaction between hardiness and appraisal of undesirable life events in the prediction of depression and illness, this interaction was found to be much stronger for nonhardy women than it was for hardy women. On the basis of this finding Rhodewalt and Zone suggested that appraisal processes are perhaps a major determinant of most hardiness effects reported in the literature. Accordingly, other researchers have examined the role of variables such as neuroticism (Bensihek, 1993) or maladjustment (Bernard and Belinsky, 1993) as possible confounds in this line of research.

In their review of the literature, Bernard and Belinsky (1993), reported that the dimensionality of the hardiness construct has been questioned along with the methods used in its measurement. Specifically, with regards to the dimensionality criticism, they found that contrary to Kobasa's claims, the three components of hardiness appeared to possess differential effects upon the stress-illness link. Furthermore, with regards to the measurement criticism, Bernard and Belinsky found a general consensus in the literature to the effect that measuring the converse of a variable, as most hardiness instruments did, was not a satisfactory way of measuring that variable (It was claimed, for example, that the presence of alienation was perhaps not quite the same thing as the

absence of commitment and so on).

Criticism has also been directed at the statistical procedures employed in the analyses of hardiness data (Benishek, 1993). It has been reported, for example, that in many hardiness studies, analyses of variance (ANOVA) have been carried out using continuous data. Finally, there has been a criticism of hardiness samples with respect to their generalizability characteristics (Funk, 1992).

Although it would be a gross distortion to suggest that the role of hardiness as a factor in the stress-illness link has been rejected, it would be equally inaccurate to state that its role has been fully understood. Further research in this area is needed.

The Role of Social Support in the Stress-Illness link

The study of the role of social support as a means of offsetting stress induced psychological and psychosomatic disorders dates back to at least the seventies. As Heller and Monahan (1977; reported in Leavy, 1983) noted "in general, the evidence is sparse concerning the ability of supportive social structure to moderate the impact of stressful life events.....how support operates, or how its beneficial effects can be optimized is a matter for future research" (p. 3). A large number of studies in this area have been done in the twenty years since Heller and Monahan's observation.

One of the early problems of this line of research was the conceptualization of social support. Various definitions have been offered. House (1981) for example, defined social support in terms of emotional support, consisting of the exchange of affection, admiration, and affirmation; appraisal support, consisting of listening to people and helping them in the assessment of their problems and the evaluation of

options; informational support, consisting of guidance and direction in the solution of practical matters; and instrumental support, consisting of, for example, lending money or providing transportation to one in need of such services. Other researchers have conceptualized social support in terms of an individual's perceptions regarding its availability, utility, and meaning (e.g., Yang & Clum, 1995).

Gore (1978) used a longitudinal design to study the effects of social support in moderating the health consequences of unemployment. Her sample consisted of 54 rural and 46 urban married blue collar men with an average age of 49. Gore also used a matched control group consisting of 74 men who were employed in similar occupations that did not lose their jobs. In this study, social support was operationalized in terms of a) subject's perception of his wife, friends, and relatives as supportive or unsupportive; b) frequency of activity outside the home with the same individuals; and c) subject's perceived opportunity for engaging in social activities which are satisfying and which allow him to talk about his problems. Her results indicated a significant difference between the depression, self-blame, and illness symptoms of the terminees according to their levels of measured social support. Data obtained from the control group, however, was highly suspect and therefore not analyzed, since the subjects in this group reported a significant amount of health related concerns. As Gore notes, these subjects were apparently motivated by the prospects of being visited by a registered nurse on a regular basis.

Cohen and Hoberman (1983) studied the combined and separate roles of positive life events and social support in the development of psychological and

physical symptoms of stress due to life change. Their subjects consisted of a group of college students enrolled at a large university. The instruments were administered during several class periods and student attendance influenced the number of subjects completing each instrument. In this study, social support was defined as perceived availability of support and as perceived support received during the past month. Results indicated the following: a) perceived availability of social support provided some protection from the adverse effects of high levels of stress; and b) increases in the perceived availability of support were associated with decreases in depressive symptoms but not with decreases in physical symptoms.

Yang and Clum (1994) studied the combined and separate roles of life stress, social support and problem solving skills as predictors of depression, hopelessness, and suicidal ideations among a group of international students from Asia enrolled in a U.S. university. In this study, social support was operationalized in terms of scores on the UCLA Loneliness Scale (Russell, Peplau, & Ferguson, 1978 as reported in Yang & Clum, 1994). This instrument measures perceived social support and degree of social integration. Yang and Clum hypothesized that levels of life stress, problem-solving deficits, and social support would both independently and interactively predict depressive symptoms, hopelessness, and suicide ideation. Results of this study affirmed both the separate and combined utility of social support, problem-solving deficits, and life stress in the prediction of depression, hopelessness, and suicidal ideation.

In a review of forty-six studies investigating the role of social support in the

stress-illness link, Leavy (1983) concluded that "regardless of research methods, one finding is consistently reported: the absence of social support is associated with increased psychological distress" (p. 15). Leavy, however, found that his literature review did not allow him to make a similarly conclusive assertion regarding the buffering effects of social support against the adverse effects of life stress. Kobasa and Puccetti (1983), for example, found that for male business executives perceptions of support from their boss did produce a buffering effect, whereas perceptions of support from their family did not produce such an effect. Indeed Kobasa and Puccetti found that family-rooted support was associated with greater number of symptoms in subjects low in hardiness.

Although the literature on the role of social support is equivocal, no researcher has argued for the wholesale dismissal of its role. Instead there seems to be a need for refinements in both conceptual and methodological approaches. Leavy identified some possible reasons for the inconsistent findings including the use of inappropriate or insensitive instruments, inappropriate statistical procedures, problems with how social support is operationalized, and variations in sample characteristics.

The Combined Roles of Hardiness and Social Support in the Stress-Illness Link

As early as 1983, Kobasa and Mark Puccetti were investigating the combined roles of hardiness and social support in the stress-illness link. In this relation, they also studied the roles of various types of social support (e.g. support received at home vs. support received at work). They hypothesized that a) high levels of hardiness along with high levels of access to social resources will predict better health status in male

executives experiencing high levels of stress; and b) higher levels of hardiness along with low levels of social resources will be correlated with better health status as compared with lower levels of hardiness and higher levels of social resources.

The subjects in this study consisted of 240 middle and upper level business executives. The results were mixed. First, although hardiness combined with social support received at work served as a buffer against the adverse effects of stress, the interaction of low levels of hardiness and social support received at home led to adverse health consequences. Second, social support received from the family functioned as a resistance resource only among hardy participants. Subjects who were high in hardiness but low in family social support showed significantly lower illness scores than executives who were low in hardiness but high in family social support. This study is subject to some of the same criticisms as were leveled against Kobasa's earlier work.

Kobasa (1979) had suggested that the three components of hardiness (commitment, challenge, and control) are so highly interrelated that a composite score can be used to represent all three components. This suggestion has been contradicted in several studies. Ganellen and Blaney (1984), for example found that the three components of hardiness were differentially related to social support. Specifically, they found strong correlations between the commitment and challenge dimensions of hardiness and social support, but they failed to find such a correlation for the control component. With respect to the roles of hardiness and social support, this study revealed that although life stress, social support, and hardiness were all directly related

to depression, social support was not found to buffer the effects of life stress.

Questions under Investigation

This study is designed to address the following questions: a) In terms of physical and psychological health, how do international students adjust to their new environment; b) does hardiness play a role in the adjustment of new international students; c) do perceptions of social support play a role in the adjustment of new international students; d) does the interaction of perceptions of social support and stress play a role in the adjustment of new international students; e) does the interaction of hardiness and stress play a role in the adjustment of new international students; f) is there a relationship between immediate post-arrival health and the 12-week post-arrival health of international students; g) are there any demographic characteristics that help predict the adjustment of new international students; and h) are there any differential effects due to the three components of hardiness.

Hypotheses

To address the above questions, the present study is designed to test the following hypotheses:

A. The hardiness level of new international students will significantly moderate the relationship between stress and adjustment. Specifically, among new international students with higher levels of hardiness, stress will be unrelated to adjustment; whereas among new international students with lower levels of hardiness, stress will be significantly related in a negative direction with adjustment.

B. New international students' perceptions of social support will significantly moderate the relationship between stress and adjustment. Specifically, among new international students with more positive perceptions of social support, stress will be unrelated to adjustment, whereas among new international students with less positive perceptions of social support, stress will be significantly related in a negative direction with adjustment.

C. The adjustment of new international students will be significantly negatively correlated with the level of discrepancy between U.S. culture and the new international students' native culture. Specifically, the mean of the adjustment scores of the new international students for whom English is the native language will be significantly lower than the mean of the adjustment scores of the new international students for whom English is not the native language.

D. The adjustment of new international students will be significantly negatively correlated with the level of discrepancy between U.S. culture and the new international students' native culture. Specifically, the mean of the adjustment scores of the new European (or from European extraction) international students will be significantly lower than the mean of the adjustment scores of the new non-European (or from non-European extraction) international students.

CHAPTER III

METHODOLOGY

Participants

The sample for this study consisted of a group of new international students. For the purposes of this study "new international student" was defined as: a) born outside of the U.S.; b) Fall 1997 enrollment at Michigan State University (MSU) represented the first and only enrollment at a U.S. college or university; c) arrived in the U.S. on or after August 1, 1997; d) other than the present stay, has not resided continuously in the U.S. for more than a month in the last 10 years; and e) has never resided in the U.S. for more than 2 months.

A power analysis (Cohen, 1977), using an alpha level of.05, R^2 of .2, power of .8, and with 7 predictor variables (base-line depression, base-line anxiety, base-line psychosomatic symptoms, base-line somatization, hardiness, social support, and stress), yielded a required sample size of 102. In order to compensate for the effects of attrition in our sample, and in order to enhance the randomness of the sample all "new" international students were contacted and solicited to participate.

The pool of potential participants for this study was identified through cooperation with the university's office of the Registrar. This office generated a list of 412 names and addresses of first-time-enrolled international students. In order to preserve the privacy of the new international students, stamped envelopes containing a cover letter (see appendix A), a sign-up sheet (see appendix C), and the initial survey package along with a stamped return envelope were submitted to the Registrar's office,

The cover letter described the purpose of the study and extended an invitation to those interested in participation, to complete and return the sign-up sheet. The registrar's office affixed the address labels and mailed the envelopes.

Of the 412 mailed packages, 9 were returned by the post office as undeliverable. Of the remaining 403 presumably delivered packages, 218 were returned (54% response rate). Of this number 92 were deemed unusable for the following reasons: 71 were excluded because the respondent did not meet all participation requirements; 14 were excluded because the respondent had not completed the survey package; and 7 were excluded because the respondent had not completed the sign-up sheet and thus could not be contacted for the final data collection session. Of the remaining 126 respondents, who had satisfied all the inclusion requirements of the study, 102 (81% response rate) completed the final survey package and thus formed the final sample of this study.

Procedures

The initial survey package consisted of the following: an informed consent form, the first demographics questionnaire (see appendix D), and two instruments measuring the physical and psychological health of the participants (see appendices E and F). The measurement of these variables in the first two weeks after arrival allows for the assessment of the effects of the predictor variables in this study while controlling for baseline levels of symptoms. The design of this study required that the initial survey package be completed on or before 30 September, 1997.

The second survey package consisted of a second demographics questionnaire

(see appendix J), the two instruments measuring the physical and psychological health of the participants, the hardiness instrument (see appendix I), the measure of stress (see appendix H), and the measure of social support (see appendix G). In order to minimize fatigue effects, four versions of this package were produced. The packages differed only in the order in which the instruments appeared. These packages were administered in person on three evenings in mid-November, 1997.

Instruments

The present study included one measure of stress (The Index of Life Stress); one measure of hardiness (the Personal Views Survey-II); one measure of social support (The Index of Social Support); and two measures of adjustment (the SUNYA-Psychosomatic Symptoms Checklist and the Symptoms Check List-90-R); a demographic questionnaire designed to elicit data on such variables as might covary with the outcome measures, or alternatively exert a confounding effect upon the results of the study. Examples include nationality, race/ethnicity, age, gender, housing situation, major, relatives within 200 miles, relatives living in the U. S., native language, and TOEFL scores. An important variable obtained from the demographic questionnaire is "relatedness." This variable is a composite of items 9 and 10 of the questionnaire (see appendix D).

Stress. The Index of Life Stress (ILS; Yang & Clum, 1995) consists of 31 statements which measures six areas of stress relevant to the international student population: language difficulty ,cultural adjustment, perceived ethnic/racial discrimination, academic concern, financial concern, and outlook for the future.

Subjects rate each statement from never (0) to often (3) according to how often the individual "feels the way described in each statement." Item ratings are summed to produce a total stress score, with higher scores reflecting higher levels of stress. Sample items include: "My financial situation makes my life very hard," "My English embarrasses me when I talk to people," and "People treat me badly just because I am a foreigner."

The test-retest reliability of this instrument over a 1-month interval was .87 (n=20); the internal consistency estimate was .86 (n=101); and the concurrent validity, measured by the correlation between the ILS and the Life Events Survey Scale (Sarason, Johnson, & Siegel, 1978 as reported in Yang & Clum, 1995), was $r(100)=-.46$, $p<.0001$.

Hardiness. The Personal Views Survey II (PVS II; Hardiness Institute, 1995) consists of 50 statements which assess the commitment, control, and challenge components of hardiness. Each statement is answered using a 4-point Likert scale (0 = Not at all true; 3 = Completely true). Higher scores indicate greater degree of each component. In contrast to the Revised Hardiness Scale, the PVS contains both positive and negative indicators of hardiness. Composite scores are calculated by combining the three component scores.

The internal consistency for the composite score range from 0.87 (Wiebe, Williams, & Smith, 1991) to 0.90 (Hardiness Institute, 1985). The internal consistency reliability for commitment, control, and challenge are .72, .62, and .70, respectively (Wiebe et al., 1991). Similar values are reported by the Hardiness Institute (1985).

Test-retest reliabilities of the PVS over time periods of two weeks or more have been reported to be in the .60's (Hardiness Institute, 1984).

Social Support. The Index of Social Support (ISS; Yang & Clum, 1995) is a 40-statement scale based on the international students' special social contact patterns. It assesses the personal meaning of social support, the level of trust and satisfaction toward the support, and the availability of support when it is needed in relation to immediate family, extended family, old friends in the home country, new friends in the U.S., churches, school organizations, the international student center on campus, and community activities. Subjects rate each statement from never (0) to often (3) according to how often the individual "feels the way described in each statement" (Yang and Clum, 1995). Item ratings are summed to produce a total score and higher scores correspond to higher levels of social support. Sample items include: "I have contact with my old friends in my home country," "I trust the international student center on campus," "The international student center on campus means a lot to me," "I participate in community activities here," "My new friends in the U.S.A. are available when I need them," "I trust my church."

The test-retest reliability of this instrument over a 1-month interval was .81 (n=20); the internal consistency estimate was .81 (n=100); and the concurrent validity, measured by the correlation between the ISS and the UCLA Loneliness Scale (Russell, Peplau, and Ferguson, 1978 as reported in Yang and Clum, 1995) was $r(100) = -.39$, $p < .0001$ (Yang and Clum, 1995).

Adjustment. The Symptom Check List-90-Revised (SCL-90-R; Derogatis, 1990), is a widely used 90-item Likert-type self-report symptom inventory designed to reflect the psychological symptom patterns of community, medical, and psychiatric respondents. Each item is rated on a five-point scale of distress (0-4) ranging from "Not at All" to "extremely." The SCL-90-R is scored and interpreted in terms of the following nine primary symptom dimensions: Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation, and Psychoticism.

For the purposes of this study, only the three symptom dimensions of Depression Anxiety, and Somatization will be used. Sample items for the Depression scale include: "Loss of sexual pleasure or Interest," and "Thoughts of ending your life." Sample items for the Anxiety scale include: "Nervousness or shakiness inside," and "Feeling tense or keyed up." And sample items for the Somatization scale include: "Headaches," and "A lump in your throat."

The internal consistencies for the Depression, Anxiety, and Somatization scales have been reported as .90, .87, .82 respectively (Derogatis, Rickels, & Rock, 1976). The combined test-retest reliabilities of these scales have been reported as .78 and .80 respectively (Derogatis, Rickels, & Rock, 1976). The concurrent validity of the SCL-90-R was established by calculating correlations between its nine primary symptom dimensions and the similar scales on the MMPI. The correlation coefficients between SCL-90-R's Depression scale and MMPI's Wiggins Depression, and Tryon Depression scales has been reported as .75 and .68, respectively. The correlation coefficient

between SCL-90-R's Anxiety scale and MMPI's Tryon Anxiety scale has been reported as .57. The correlation coefficients between SCL-90-R's Somatization scale and MMPI's Hypochondriasis and Tryon's Body Symptom scales has been reported as .57, .66 (Derogatis, Rickels, & Rock, 1976).

The SUNYA-Psychosomatic Symptoms Checklist-Revised is a self-report scale which contains 17 common psychosomatic complaints. Subjects are asked to rate each item on frequency and intensity of occurrence, using a five-point scale. The PSC yields a composite score, derived by summing the cross-product of each item's frequency by intensity. Sample items include: "Headaches", "Backaches", and "Sore throat."

Test-retest reliability for the PSC has been reported as generally high across 1-week, 4-week, and 8-week intervals. These were .88, .84, and .80, respectively (Attanasio, Andrasik, Blanchard, & Arena, 1984).

Data analytic procedures:

1. Descriptive statistics (i.e., mean, standard deviation, skewness, and range) were carried out on all the predictor and outcome measures and also on data obtained through the demographics questionnaire (i.e., age, nationality, major, gender, housing situation, relatives within 200 miles, relatives living in the U.S., native language, and TOEFL scores).
2. Cronbach's alpha, a measure of internal consistency reliability, were computed for the appropriate measures used in this study.
3. The strength of the relationships between various dependent and independent variables were evaluated through the generation of a correlation matrix.

Additionally, this analysis yielded preliminary information regarding confounds and covariates.

4. Chi-square analyses were used to assess mean differences with categorical data.

5. A set of full-model regression analyses were performed in order to obtain estimates of the influence of each predictor variable (pre-test symptoms, stress, hardiness, and social support) and their interactions upon the outcome variable (Post-test symptoms). Other regression (F-test) analyses, as well as post-hoc analyses were carried out in order to investigate the roles of such variables as race, language, nationality, and relatedness.

6. The prediction of adjustment by the interaction between life stress and social support and the interaction between life stress and hardiness were tested by hierarchical regression analysis.

CHAPTER IV

RESULTS

Format

The results chapter is divided into the following sections:

1. Data Entry Issues

2. a. Sample Description.
   b. Sample Representativeness.

3. a. Description of the Variables Used in the Analyses.
   b. Internal Consistencies of the Instruments.
   c. Comparison of Scores Obtained in the Present Study with Those Reported in Other Studies.

4. a. Frequency and Intensity of Symptoms, Syndromes.
      1. Psychological Symptoms and Syndromes
      2. Psychosomatic Symptoms

5. a. Descriptive Analysis of the ILS
   b. Descriptive Analysis of the ISS.

6. a. Inferential Statistics and Hypothesis Testing
      1. Hypothesis 1
      2. Hypothesis 2
      3. Hypothesis 3
      4. Hypothesis 4
   b. The Individual Effects of the Three Components of Hardiness.
      1. Challenge
      2. Commitment
      3. Control

7. a. Role of Demographic Factors

Data Entry Issues

The data was first examined for missing values, outliers, and accuracy of data entry. Eight data entry errors were detected and rectified. The number of missing values for a scale item ranged from 1 to 6. With regards to the demographic information, missing values were found for Relatives in the United States (n=2), Relatives in Lansing/East Lansing (n=2), Distance of Relatives from Lansing/East Lansing (n=3), Closeness to Relatives (n=2), Friends/Acquaintances in Lansing/East Lansing (n=2), Mother's Education (n=2), Father's Education (n=4), Parents Educated in the United States (n=1), and Significant Incidents While in the United States (n=8).

Sample Description

Table 1 contains descriptive demographic characteristics of the sample which consisted of 48% males (n=49), and 52% females (n=53). They ranged in age from 17 to 41 years with an average age of 24.43 years. The sample included students of 34 nationalities with students from China forming the largest group (n=21; 20.6%), followed by students from Thailand (n=11; 10.8%). When participants were assigned to geographical regions according to their country/culture of origin the Far East was the largest group (n=54; 52%), followed by the Middle East (n=16; 15%) and Western Europe (n=12; 12%). For the purposes of hypothesis D, the regions were then collapsed into European (n=17; 17%) and Non-European (n=85; 83%). The resultant variable was labeled "Zregion." On the race/ethnicity dimension, the majority of the participants identified themselves as Asian (n=68; 67%), followed by White (n=26; 26%), and Black (n=3; 3%). The majority of the participants described their marital

status as single (n=71; 70%), followed by married or engaged but currently not residing with their spouse (n=20; 20%).

Table 1. Sample Demographic Information. (Numbers in parentheses reflect the appropriate MSU population data)

Variable		#	%
Sex			
	Males	49(1607)	48(60)
	Females	53(1057)	52(40)
Age			
	17 years or less	1	1
	18-20 years	15	14.7
	21-23 years	31	30.4
	24-26 years	30	29.4
	27-29 years	15	14.7
	30-32 years	5	4.9
	33-35 years	4	3.9
	36-38 years	0	0
	39-41 years	1	1
	42 years or more	0	0
Nationality			
	China	21(269)	21(10)
	Thailand	11(74)	11(2.8)
	Malaysia	7(83)	7(3.1)
	South Korea	6(550)	6(21)
	Taiwan	6(293)	6(11)
	Pakistan	5	5
	India	4(176)	4(6.6)
	Germany	3	3
	Turkey	3	3
	Philippines	3	3
	Indonesia	3(54)	3(2)
	Belgium	2	2
	France	2	2
	Lebanon	2	2
	Sri-Lanka	2	2
	Russia	2	2
	Australia	2	2
	Romania	2	2
	Japan	1(197)	1(7.4)
	United Kingdom	1	1
	Yugoslavia	1	1
	Chile	1	1
	Kenya	1	1
	Brazil	1	1
	Netherlands	1	1
	Peru	1	1
	Hong Kong	1(54)	1(2)
	Nigeria	1	1
	Sweden	1	1
	Haiti	1	1
	Colombia	1	1
	Egypt	1	1

Table 1 (cont'd).

Jordan	1	1
Tanzania	1	1
Region		
Far East (Japan, S.Korea, Taiwan, Thailand, China, Philippines, Hong Kong, Malaysia)	54	53
Middle East (Pakistan, India, Sri-Lanka, Indonesia)	16	15
Near East (Lebanon, Turkey, Egypt, Jordan)	7	7
Africa (Kenya, Nigeria, Tanzania)	3	3
Eastern Europe (Yugoslavia, Russia, Romania)	5	5
Western Europe (UK, Belgium, Germany, France, Netherlands, Australia, Sweden)	12	12
South America (Chile, Brazil, Peru, Haiti, Colombia)	5	5
Zregion (European Vs. Non-European)		
European	17	17
Non-European	85	83
Language		
Arabic	4	3.9
Chinese	34	33.3
Dutch	3	2.9
English	5	4.9
Filipino	3	2.9
French	4	3.9
German	3	2.9
Hindi	5	4.9
Indonesian	3	2.9
Japanese	1	1
Korean	6	5.9
Portugese	1	1.0
Romanian	2	2
Russian	2	2.0
Serbian	1	1.0
Sinhalese	1	1.0
Spanish	3	2.9
Swahili	1	1.0
Swedish	1	1.0
Thai	11	10.8
Turkish	3	2.9
Urdu	5	4.9

Table 1 (cont'd).

Race		
Asian	68	66.7
Black	3	2.9
White	26	25.5
Hispanic	3	2.9
Pacific Islander	1	1
Mixed Race	1	1
Other	0	0
Marital Status		
Married/engaged spouse with me	7	6.9
Married/engaged spouse not with me	20	19.6
Single	71	69.6
Living with Boyfriend/Girlfriend	2	2
Separated	0	0
Divorced	2	2
Widowed	0	0

Table 2 contains information regarding the social network characteristics of the participants. It is evident that the sample consisted mostly of individuals with no established social network upon arrival. Of the 102 participants only 33% (n=34) had relatives in the United States, of whom only 21% (n=7) resided in the Lansing/East Lansing area. Of these participants, 71% (n=24) indicated that they felt close or very close to these relatives. Overall, just under half (n=47; 46%) had friends or acquaintance in the Lansing/East Lansing area upon arrival.

The majority (47%) of the participants resided on campus in residence halls and 75% (n=76) described their new accommodation as different or very different from their accommodations in their home countries.

Table 2. Sample Social Network Information

Variable	#	%
Relatives in the United States		
Yes	34	33
No	66	65
Missing	2	2
Do you have relatives in the Lansing/East Lansing area		
Yes	7	21
No	27	79
How close do you feel to your relatives in the US		
Very Close	16	47
Close	8	24
Not Close	10	29
Did you have friends or acquaintances in Lansing/East Lansing area		
No	53	52
Yes	47	46
Missing	2	2
Accommodation Type		
Live on campus in a residence hall	48	47
Live on campus in the university apartments	39	38
Live in a fraternity or sorority	0	0
Live off-campus in an apt or house	10	10
Live off-campus with parents or relatives	5	5
Live in a cooperative house	0	0
Accommodation Similarity		
Very similar	1	1
similar	25	25
Different	31	30
Very Different	45	44

Table 3 contains the education related variables of the sample which consisted mostly (n= 75; 74%) of graduate students. The largest group (n=28; 28%) was pursuing degrees in the College of Business followed by the College of Engineering (n=19; 19%). Although only 5 members (n=5; 4.9%) of the sample identified themselves as native English speakers, the sample as a whole tended to be relatively proficient in their English language skills as illustrated by a mean score of 605 in the TOEFL (mode: 630; median: 610). The usual required score for the purposes of

admission to a U.S. college or university is 550. The participants also tended to be the children of well-educated parents with roughly 46% of their mothers and 61% of their fathers holding at least a bachelor's degree. Only 9 (8%) of their parents were educated in the United States.

Table 3. Sample Education Related Information

Variable	#	%
Educational Level		
Graduate	75	73.5
Undergraduate	27	26.5
TOEFL scores		
490-532	4	3.9
533-575	20	19.6
576-618	24	23.5
619-661	27	26.5
662-704	8	7.8
Mean: 605.52; Mode: 639; Median: 610		
SD: 41.88		
Major		
College of Business	28(448)	28(17)
College of Engineering	19(430)	19(16)
College of Natural sciences	18(408)	18(15)
College of Agriculture	8(272)	8(10)
College of Communication Arts & Science	7(242)	7(9)
College of Education	6(136)	6(5)
College of Arts & Letters	5(280)	5(11)
ELC	4	4
College of Social Sciences	2(170)	2(6)
College of Human Ecology	2(65)	2(2)
Undecided	1	1
Missing	2	2
Mother's Educational Level		
Less than HS	16	15.7
HS	30	29.4
Some College	6	5.9
Bachelor's Degree	40	39.2
Graduate, Professional Degree	7	6.9
Deceased	1	1.0
Missing	2	2.0
Father's Educational Level		
Less than HS	6	5.9
HS	21	20.6
Some College	5	4.9
Bachelor's Degree	45	44.1
Graduate, Professional Degree	18	17.6
Deceased	3	2.9
Missing	4	3.9
Parents Educated in the US		
Yes	9	9
No	92	91

Sample Representativeness

The representativeness of the sample used in this study was evaluated by comparing the demographic characteristics of the sample with that of the international student population at MSU. Values in parentheses in tables 1, 2, and 3 indicate the demographic characteristics of the international students enrolled at MSU. These data were collected in a descriptive study carried out by the MSU Office of International Students and Scholars (MSU-OISS) between September 20, 1996 and October 30, 1996, approximately one year prior to the collection of data for the present study. With regards to the sex of the participants, the international students enrolled at MSU consist mostly (60%) of males, while the participants in this study were more equally divided with a slightly higher number of females. Students from South Korea form the largest single group of international students enrolled at MSU while students from China formed the largest group in the present study. The top five nationalities represented in this study, however, include five of the top eight nationalities represented at MSU as a whole. Finally, the distribution of majors in our sample closely resembles that of MSU as a whole.

Variables Used in the Present Analyses

Table 4 contains the full name, abbreviated name, mean, standard deviation, skewness, and range for each of the variables used in the present analyses. The distribution of all variables was fairly normal. With the exception of hardiness and its three components (i.e. challenge, commitment, and control), the distribution of all other variables was characterized by some positive skewness. The negative skewness characterizing the distribution of hardiness and its components is indicative of a generally hardy sample. Furthermore, on certain variables, such as depression, anxiety, or psychosomatic symptoms, the positive skewness of self-reported symptoms is typical of most non-clinical samples and indicates that the majority of the sample reported fewer, and less severe psychological and/or physical symptoms.

Tables 5.1 and 5.2 are correlation matrices composed of the Pearson correlation coefficients of the strength of the relationships between the various variables used in the present analyses. Although there are a fairly large number of significant correlations between the various variables used in this study, no correlation coefficient is of a magnitude large enough to raise multicollinearity concerns. Indeed, as Tabachnik and Fidell (1989) have noted multicollinearity becomes a problem when bivariate correlations are equal to or greater than .90.

Table 4. Descriptive Statistics for All Variables.

Variable Name	Abbreviation	M	SD	Sk.	Range
Depression at Time A	ADEPR	14.81	11.51	1.47	0-58
Anxiety at Time A	AANX	4.70	5.24	1.68	0-25
Psychosomatic Symptoms at Time A	PSCPRE	16.36	17.23	2.22	0-98
Somatization at Time A	ASOM	4.77	4.88	1.88	0-26
Depression at Time B	BDEPR	14.59	12.00	1.28	0-54
Anxiety at Time B	BANX	4.17	5.12	2.07	0-25
Psychosomatic Symptoms at Time B	PSCPST	16.57	15.77	1.54	0-73
Somatization at Time B	BSOM	4.68	4.75	1.51	0-22
Hardiness Score	HARDINES	89.44	12.76	-0.46	55-111
Index of Life Stress	STRESS	32.97	13.23	0.26	1-72
Index of Social Support	SUPPORT	74.70	16.01	0.36	31-118
Components of Hardiness					
Commitment	ACOMM	31.77	5.70	-.35	18-41
Challenge	ACHAL	25.79	4.92	-.74	10-36
Control	ACONT	31.57	5.36	-.84	9-4

Table 5.1 Correlations Among Variables Used in the Analyses.

Variable	1	2	3	4	5	6	7	8	9	10	11
1.ADEPR	1										
2.AANX	.79**	1									
3.PSCPRE	.54**	.61**	1								
4.ASOM	.67**	.76**	.60**	1							
5.BDEPR	.63**	.51**	.38**	.49**	1						
6.BANX	.57**	.65**	.41**	.55**	.84**	1					
7.PSCPST	.55**	.48**	.67**	.49**	.68**	.58**	1				
8.BSOM	.63**	.60**	.43**	.64**	.81**	.78**	.70**	1			
9.Hardines	-.27**	-.32**	-.14**	-.27**	-.39**	-.35**	-.32**	-.38**	1		
10.Stress	.40**	.37**	.34**	.31**	.53**	.41**	.53**	.44**	-.42**	1	
11.Support	-.13	-.06	.01	-.12	-.20*	-.09	-.18	-.17	.16	-.26**	1

Table 5.2. Correlations Among the Three Components of Hardiness

Variable	1	2	3
1. Commitment	1		
2. Challenge	.43**	1	
3. Control	.53**	.33**	1

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Internal Consistency of the Instruments Used

A set of analyses designed to establish the reliabilities and internal consistencies of the instruments used in this study was carried out. Table 6 contains the results of these analyses. The obtained Cronbach Alphas are, by and large, comparable to those obtained in other studies. In case of the SUNYA-PSC, although no internal consistency statistics have been reported, the 1-week, 4-week, and 8-week test-retest reliabilities have been reported to be .88, .84, and .80 respectively. Although this does not appear to compare particularly well with the 12-week test-retest reliability of .67 obtained in this study, it is measured over a longer period of time than those reported in other studies.

Table 6. The Reliability Coefficients (Cronbach Alpha) of the Instruments.

Instrument	# of Cases	# of Items	α	Reported α
SUNYA-PSC (Frequency of Sx-initial)	102	28	.85	See text
SUNYA-PSC (Intensity of Sx-initial)	102	28	.86	See text
SCL-90-R (initial)	102	42	.94	.91
SUNYA-PSC (Frequency of Sx-final)	102	28	.76	See text
SUNYA-PSC (Intensity of Sx-final)	102	28	.78	See text
SCL-90-R (final)	102	42	.95	.91
Index of Life Stress	102	31	.86	.86(n=101)
Index of Social support	102	40	.88	.81(n=100)
Personal Views Survey	102	50	.81	Range:.87-.90

Comparison of the Scores Obtained by the Participants in the Present Study With Those Reported in Other Studies

The reported values were based on scores obtained from a group of 101 international students (73 males; 28 females) ranging in age from 18 to 40 with a mean of 23.49 and standard deviation of 4.48. These demographics are descriptive of a sample that is similar in age and sex to the participants of the present study.

Table 7: ILS and ISS Scores: Present Study Vs. Other Studies.

Instrument	Present Study		Reported	
	M	SD	M	SD
STRESS	32.97	13.23	36.63	13.49
SUPPORT	74.69	16.01	67.91	18.40

Table 8 contains a comparison of the SUNYA-PSC scores obtained by the participants in the present study with those reported in other studies. The reported values were based upon scores obtained from a group of 947 subjects.

Table 8: SUNYA-PSC Scores: Present Study Vs. Other Studies:

Instrument	Present Study		Reported	
	M	SD	M	SD
SUNYA-PSC(initial)	16.36	17.23	23.7	24.5
SUNYA-PST(final)	16.57	15.77	23.7	24.5

Frequency and Intensity of Symptoms, Syndromes, and Critical Items

Psychological Symptoms and Syndromes

Each participant's scores on the Depression, Anxiety, and Somatization scales of the SCL-90-R was converted into a T-score thus allowing for a comparison with the normative sample of the instrument. The results of these conversions along with descriptive statistics appear in Table 9. These scores are based on a mean of 50 and a standard deviation of 10. Scores above two standard deviations of the mean are generally considered in the clinical range. It is evident that as a group, the participants

did not exhibit clinically significant levels of depression, anxiety, or somatization either upon arrival or 12 weeks post arrival.

Table 9: Descriptive Statistics and Paired Sample T-Tests for the Depression, Anxiety, and Somatization scales of the SCL-90-R.

Variable	M	SD	t	Sig.
Depression (initial)	59.44	8.58	.853	.396
Depression (final)	58.81	9.81		
Anxiety (initial)	55.20	10.97	1.654	.101
Anxiety (final)	53.70	11.14		
Somatization (initial)	51.42	9.55	.558	.578
Somatization (final)	50.99	9.57		

The analysis of the scores of individual participants, however, reveals that of the 102 participant, 57 (55.8%) scored one standard deviation or higher above the mean on the Depression scale of the SCL-90-R. Of these, 14 (13.7%) obtained clinically significant scores (2 standard deviations above the mean) on the Depression scale (refer to Table 10). The number of clinically depressed students (as defined by scores on the Depression scale of the SCL-90-R) would increase to 19 (18.6%) if those participants scoring 69 are also included. Although the 12-weeks post-arrival scores on this scale show an increase in the number of participants scoring 59 or lower (from 45 to 53), there is also an increase in the number of participants scoring in the clinical range for depression (14 to 16).

Table 10: T-Scores on the Depression Scale of the SCL-90-R.

Variable	Range	Frequency
Depression (initial)	30-39	2
	40-49	11
	50-59	32
	60-69	43
	70-79	12
	80-89	2
Depression (final)	30-39	4
	40-49	16
	50-59	33
	60-69	33
	70-79	12
	80-89	4

Of the 102 participants, 33 (32.4%) scored one standard deviation or higher above the mean on the Anxiety scale of the SCL-90-R upon arrival. Of these, 11 (10.8%) obtained clinically significant scores (refer to Table 11). The 12-weeks post-arrival scores indicate an overall increase in the number of participants scoring 59 or lower (from 69 to 74), and a decrease in the number of participants scoring in the clinical range for anxiety (from 11 to 9).

Table 11: T-Scores on the Anxiety Scale of the SCL-90-R

Variable	Range	Frequency
Anxiety (initial)	30-39	2
	40-49	27
	50-59	40
	60-69	22
	70-79	9
	80-89	2
Anxiety (final)	30-39	7
	40-49	26
	50-59	41
	60-69	19
	70-79	7
	80-89	2

Finally, on the Somatization scale of the SCL-90-R, 19 (18.6%) participants scored one standard deviation or higher above the mean upon arrival. Of these, 4

(3.9%) obtained clinically significant scores (refer to Table 12). The 12-weeks post-arrival scores on this scale, revealed an overall decrease in the number of participants scoring 59 or lower (from 83 to 79), a decrease in the number of participants scoring in the clinical range for anxiety (from 4 to 2), and an increase in the number of participants who scored one standard deviation above the mean (from 15 to 21).

Table 12: T-Scores on the Somatization Scale of the SCL-90-R

Variable	Range	Frequency
Somatization (initial)	30-39	13
	40-49	36
	50-59	34
	60-69	15
	70-79	3
	80-89	1
Somatization (final)	30-39	12
	40-49	37
	50-59	30
	60-69	21
	70-79	2
	80-89	0

A set of items from the SCL-90-R were selected for individualized evaluation. The criteria for the selection of these items consisted of a) significance for college counseling center attention (e.g. suicidal ideations); and b) relevance to an aspect of the study (e.g. feeling lonely, feeling no interest in things, and feeling hopeless). The results of these analyses are reflected in Table 13. Immediately upon arrival, 3 (2.94%) of the participants endorsed having experienced suicidal ideations, while 5 (4.9%) endorsed these thoughts 12 weeks post arrival.

Table 13: Frequency of Critical Items.

Critical Item	Response	Fr (time 1)	Fr (time 2)
Thoughts of ending your life	Moderately	2	3
	Quite a bit	0	0
	Extremely	1	1
Thoughts of death and dying	Moderately	1	4
	Quite a bit	1	0
	Extremely	1	1
Feeling lonely	Moderately	22	24
	Quite a bit	14	10
	Extremely	9	8
Feeling no interest in things	Moderately	7	10
	Quite a bit	4	7
	Extremely	1	2
Feeling hopeless about the future	Moderately	9	7
	Quite a bit	2	5
	Extremely	2	1

Psychosomatic Symptoms

Descriptive analysis of the individual items comprising the SUNYA-PSC yielded the information reflected in Table 14. This analysis consisted of determining the number of participants who endorsed experiencing an ailment at least once a week or more often (i.e. several times a week or daily), with an intensity at least in the moderate range or worse (i.e. severe or extreme). The most common and bothersome psychosomatic symptom among the participants upon arrival (T1) was fatigue followed by headaches, backaches, and insomnia. Although at 12 weeks post arrival, fatigue, headaches, and backaches remained, and with the exception of headaches which remained constant, increased as the most common and bothersome psychosomatic symptoms, there were some noteworthy changes in this clinical picture. Common cold, which was not endorsed with the frequency and intensity described above upon arrival, was endorsed by roughly 10% of the sample as a frequent and moderately (or

worse) bothersome ailment 12 weeks post arrival. Also, cold sores, a viral disease with frequent flare ups at times of high stress, was endorsed by roughly 6% of the sample.

Table 14: Frequently and Intensely Experienced Psychosomatic Symptoms.

Symptom	Times Endorsed (T1)	Symptom	Times Endorsed (T2)
1. Fatigue	32	1. Fatigue	36
2. Headaches	17	2. Headaches	17
3. Backaches	12	3. Backaches	14
4. Insomnia	11	3. Weakness	14
4. Stomach pain	11	5. Insomnia	13
6. Weakness	9	6. Stomach pain	11
7. Dizziness	7	7. Common cold	9
8. Migraine	6	8. Sore throat	7
9. Diarrhea/Constipation	5	9. Cold sores	6
9. Sore throat	5	10. Migraine	5
9. Upset stomach	5	10. Upset stomach	5
9. Nausea	5	12. Diarrhea/Constipation	4
13. Common cold	4	12. Dizziness	4
14. Infected eye	3	12. Nausea	4
14. Irregular heart beat	3	15. Heartburn	3
14. Heartburn	3	15. Heart palpitations	3
17. Tonsilitis	2	17. Tonsilitis	2
17. Sinus infection	2	17. Infected eye	2
17. Heart palpitations	2	17. Irregular HB	2
20. Bronchitis	1	17. Sinus infect	2
20. Cold sores	1	21. Laryngitis	1
20. High blood	1	21. Chest pain	1
		21. Bronchitis	1

Descriptive Analysis of the Index of Life Stress

The Index of Life Stress (ILS), in addition to yielding a composite score, provides information on five stress domains specific to the international student's experience. These domains consist of a) concern about finances and desires to stay in the United States; b) language difficulties; c) interpersonal stress; d) stress from cultural adjustment and desire to return to one's own country; and e) academic pressure. Table 15 reflects the results of an item analysis of the ILS along each of these five dimensions. This analysis consisted of first rank ordering the items in

descending order according to the frequency with which the item was endorsed as "often true." Then calculating an arithmetic mean for each dimension by dividing the sum of the position ranks of the items comprising each dimension by the number of items in each dimension. The results describe, in descending order, the stress factors most salient to the participants in the present study. Academic pressure is identified as the most salient source of stress for the participants followed by financial concerns and thoughts about staying in the United States.

Table 15. Salient Sources of Life Stress.

Dimension	M	SD
1. academic pressure	5.60	4.67
2. concern about finances and desires to stay in the United States	13.00	6.93
3. stress from cultural adjustment and desire to return to one's own country	15.75	8.84
4. language difficulties	15.80	4.97
5. interpersonal stress	23.33	5.86

The items comprising the ILS were also analyzed for frequency of being endorsed as "often true." The top ten most frequently endorsed items are listed in Table 15.1. The prevalence of academic pressures as a stressful theme is also evident from this analysis.

Table 15.1: Frequency of Occurrence of Items Comprising the ILS.

Item	Frequency
1. It would be the biggest shame for me if I fail in school (e)	44
2. I don't like American food (d)	35
3. I study very hard in order not to disappoint my family (e)	33
4. I worry about my academic performance (e)	31
5. I worry about my future career in my home country (d)	28
6. I worry about my financial situation (a)	27
7. I'm not doing as good as I want to in school (e)	25
8. I worry about my future: will I return to my home country or stay in the U.S.A.? (a)	22
9. I worry about whether I will have my future career in the U.S.A. (a)	18
10. I can't express myself well in English (b)	15

The letters in the parentheses correspond to the five stress domains described above.

Descriptive Analysis of the Index of Social Support

The Index of Social Support (ISS), in addition to yielding a composite score, provides information on four general sources of social support specific to the international student's experience. These sources consist of a) contact with old friends in home countries, secondary family, and the international student organizations on campus (contact with one's own culture in general); b) contact with community activities and student organizations; c) contact with new friends in the U.S. and immediate family ; and d) contact with religious places (e.g. churches). Table 16 reflects the results of an item analysis of the ISS along each of the four dimensions. This analysis consisted of first rank ordering the items in descending order according to the frequency with which the item was endorsed as "often true." Then calculating an arithmetic mean for each dimension by dividing the sum of the position ranks of the items comprising each dimension by the number of items in each dimension. The results describe, in descending order, the most salient sources of social support to the participants in the present study. Contact with new friends and members of one's immediate family is identified as the most salient source of social support for the participants followed by contact with sources representing one's own culture.

Table 16. Salient Sources of Social Support.

Dimension	M	SD
1. contact with new friends in the U.S. and direct family	11.71	6.7
2. contact with one's own culture in general	15.86	8.88
3. contact with religious places	26.20	2.77
4. contact with community activities and student organizations	35.50	3.03

The items comprising the ISS were also analyzed for frequency of being endorsed as "often true." The top ten most frequently endorsed items are reflected in Table 16.1. Perception of one's family and cultural resources as reliable and important sources of social support is evident.

Table 16.1: Frequency of Occurrence of Items Comprising the ISS.

Item	Frequency
1. I trust my family	91
2. My family is available when I need it	86
3. I trust my old friends in my home country	82
4. My old friends in my home country mean a lot to me	73
5. I am satisfied with my old friends in my home country	72
6. I have contacts with my old friends in my home country	59
7. My old friends in my home country are available when I need them	56
8. I trust my extended family	51
9. My friends in the U.S.A. are available when I need them	47
10. I have contact with my new friends in the U.S.A.	47

Inferential Statistics and Hypothesis testing

In the present study, the outcome variable, adjustment, is operationally defined in terms of scores on the Depression, Anxiety, and Somatization scales of the SCL-90-R (SCL-90-R; Derogatis, 1990), as well as the total scores on the SUNYA-PSC (Attanasio, Andrasik, Blanchard, & Arena, 1984). Accordingly, the first group of analyses consist of the evaluation of two sets of proposed structural equations. Each set is composed of four equations each of which is a hypothetical function of the relationship between an outcome variable, (i.e. Depression, Anxiety, Psychosomatic Symptoms, and Somatization) and a group of predictors. The two sets of equations fully test the first two hypotheses proposed in this study.

Hypothesis 1

This hypothesis proposes that the hardiness level of new international students will significantly moderate the relationship between stress and adjustment. Specifically, among new international students with higher levels of hardiness, stress will be unrelated to adjustment; whereas among new international students with lower levels of hardiness, stress will be significantly related in a negative direction with adjustment. Structurally, and given the operational definitions of adjustment in this study, this hypothesis may be represented as follows:

1. $BDEPR = \beta_1 ADEPR + \beta_2 HARDINES + \beta_3 STRESS + \gamma HARDINESS*STRESS$

2. $BANX = \beta_1 AANX + \beta_2 HARDINES + \beta_3 STRESS + \gamma HARDINESS*STRESS$

3. $PSCPST = \beta_1 PSCPRE + \beta_2 HARDINES + \beta_3 STRESS + \gamma HARDINESS*STRESS$

4. $BSOM = \beta_1 ASOM + \beta_2 HARDINES + \beta_3 STRESS + \gamma HARDINESS*STRESS$

Evaluation

Multiple Regression (MR) technique using the Windows (Microsoft Corp., 1995) version of the Statistical Package for the Social Sciences (SPSS-7.5; 1995) was used to evaluate the proposed models.

Tables 17.1 and 17.2 contain the results of the evaluation of equation 1.

Table 17.1: The Amount of Variation in BDEPR Explained by Equation 1.
Dependent Variable: BDEPR (Depression at time B)

Predictor(s)		R^2	ΔR^2	Sig. ΔF
a.	ADEPR	.40	.40	.000
b.	ADEPR HARDINESS STRESS	.51	.11	.000
c.	ADEPR HARDINESS STRESS HARDINESS*STRESS	.51	.00	.364

Table 17.2: The Evaluation of Coefficients Associated with the Predictor Variables.

Predictor(s)		F	Sig.	β	t	Sig.
a.	ADEPR	66.70	.000	.63	3.18	.000
b.	ADEPR	33.98	.000	.48	6.22	.000
	HARDINESS			-.15	-1.9	.060
	STRESS			.28	3.35	.001
c.	ADEPR	25.65	.000	.47	5.99	.000
	HARDINESS			-.15	-1.9	.056
	STRESS			.26	3.18	.002
	HARDINESS*STRESS			-.07	-.91	.364

Alpha = .05

As expected, the most significant amount of variation in Depression at time 2 (40%) is explained by the baseline level of Depression established at time 1. The addition of HARDINESS and STRESS into the analysis yields a significant additional amount of explained variation (11%). The interaction of HARDINESS and STRESS,

however, does not yield any additional amount of explained variation. The F statistics of 25.65 associated with the full model denotes that it explains a significant amount of the total variation in Depression at time 2. Finally, although the t statistic associated with the interaction of HARDINESS and STRESS does not warrant the rejection of the null hypothesis associated with the first hypothesis, as defined in terms of Depression as outcome, the t statistics associated with ADEPR and STRESS indicate that these variables are significant predictors of Depression while HARDINESS is found to be a marginally significant predictor of this outcome.

Tables 18.1 and 18.2 contain the results of the evaluation of equation 2.

Table 18.1: The Amount of Variation in BANX Explained by Equation 2.
Dependent Variable: BANX (Anxiety at time B)

	Predictor(s)	R^2	ΔR^2	Sig. ΔF
a.	AANX	.42	.42	.000
b.	AANX HARDINESS STRESS	.46	.04	.027
c.	AANX HARDINESS STRESS HARDINESS*STRESS	.47	.01	.121

Table 18.2: The Evaluation of the Coefficients Associated with the Predictor Variables.

	Predictor(s)	F	Sig.	β	t	Sig.
a.	AANX	71.55	.000	.65	8.46	.000
b.	AANX	27.67	.000	.55	6.76	.000
	HARDINESS			-.11	-1.28	.205
	STRESS			.16	1.86	.067
c.	AANX	21.67	.000	.54	6.59	.000
	HARDINESS			-.11	-1.35	.180
	STRESS			.14	1.59	.116
	HARDINESS*STRESS			-.12	-1.57	.121

Alpha = .05

As expected the most significant amount of variation in Anxiety at time 2 (42%) is explained by the baseline level of Anxiety established at time 1. The addition of HARDINESS and STRESS into the analysis yields a significant additional amount of explained variation (4%). The interaction of HARDINESS and STRESS, however, does not yield any significant additional amount of explained variation. The F statistic of 21.67 associated with the full model denotes that it explains a significant amount of the total variation in Anxiety at time 2. The t statistic associated with the interaction of HARDINESS and STRESS does not warrant the rejection of the null hypothesis associated with the first hypothesis as defined in terms of Anxiety as outcome. The t statistics associated with the other predictors indicate that other than AANX no other variables are significant predictors of Anxiety at time 2.

Tables 19.1 and 19.2 contain the results of the evaluation of equation 3.

Table 19.1: The Amount of Variation in PSCPST Explained by Equation 3.
Dependent Variable: PSCPST (Psychosmatic Symptoms at time B)

	Predictor(s)	R^2	ΔR^2	Sig. ΔF
a.	PSCPRE	.44	.44	.000
b.	PSCPRE HARDINESS STRESS	.56	.12	.000
c.	PSCPRE HARDINESS STRESS HARDINESS*STRESS	.59	.03	.014

Table 19.2: The Evaluation of the Coefficients Associated with the Predictor Variables.

Predictor(s)		F	Sig.	β	t	Sig.
a.	PSCPRE	79.14	.000	.67	8.90	.000
b.	PSCPRE	41.41	.000	.55	7.68	.000
	HARDINESS			-.12	-1.64	.104
	STRESS			.29	3.80	.000
c.	PSCPRE	34.31	.000	.52	7.38	.000
	HARDINESS			-.13	-1.74	.085
	STRESS			.27	3.49	.001
	HARDINESS*STRESS			-.17	-2.51	.014

Alpha = .05

As expected the most significant amount of variation in Psychosomatic Symptoms at time 2 (44%) is explained by the baseline level of psychosomatic symptoms established at time 1. In this case, however, the addition of HARDINESS, STRESS, and the interaction of HARDINESS and STRESS also yield significant additional amounts of explained variation (12% and 2.8%, respectively). The F statistic of 34.31 associated with the full model denotes that it explains a significant amount of the total variation in psychosomatic symptoms at time 2. The t statistic associated with the interaction of HARDINESS and STRESS warrants the rejection of the null hypothesis associated with the first hypothesis as defined in terms of psychosomatic symptoms as outcome. Finally, the t statistics associated with PSCPRE and STRESS identify them as a significant predictors of psychosomatic symptoms.

Tables 20.1 and 20.2 contain the results of the evaluation of equation 4.

Table 20.1: The Amount of Variation in BSOM Explained by Equation 4.
Dependent Variable: BSOM (Somatization at time B)

Predictor(s)		R^2	ΔR^2	Sig. ΔF
a.	ASOM	.40	.40	.000
b.	ASOM HARDINESS STRESS	.49	.08	.001
b.	ASOM HARDINESS STRESS HARDINESS*STRESS	.49	.00	.255

Table 20.2: The Evaluation of Coefficients Associated with Predictor Variables.

Predictor(s)		F	Sig.	β	t	Sig.
a.	ASOM	67.62	.000	.64	8.22	.000
b.	ASOM	30.92	.000	.53	6.87	.000
	HARDINESS			-.14	-1.77	.081
	STRESS			.22	2.68	.009
c.	ASOM	23.59	.000	.51	6.52	.000
	HARDINESS			-.15	-1.83	.071
	STRESS			.20	2.47	.015
	HARDINESS*STRESS			.09	-1.15	.255

Alpha = .05

As expected the most significant amount of variation in Somatization at time 2 (40%) is explained by the baseline level of Somatization established at time 1. The addition of HARDINESS and STRESS into the analysis yields a significant additional amount of explained variation (8.3%). The interaction of HARDINESS and STRESS, however, does not yield any additional amount of explained variation. The F statistic of 23.59 associated with the full model denotes that it explains a significant amount of the total variation in Somatization at time 2. Finally, although the t statistic associated with the interaction of HARDINESS and STRESS does not warrant the rejection of the null hypothesis associated with the first hypothesis, as defined in terms of

Somatization as outcome, the t statistics associated with ASOM and STRESS indicate that these variables are significant predictors of Somatization, while HARDINESS is found to be a marginally significant predictor of this outcome.

Hypothesis 2

This hypothesis proposes that the new international students' perceptions of social support will significantly moderate the relationship between stress and adjustment. Specifically, among new international students with more positive perceptions of social support, stress will be unrelated to adjustment, whereas among new international students with less positive perceptions of social support, stress will be significantly related in a negative direction with adjustment. Structurally, and given the operational definitions of adjustment in this study, this hypothesis may be represented as follows:

5. $BDEPR = \beta_1 ADEPR + \beta_2 SUPPORT + \beta_3 STRESS + \gamma SUPPORT*STRESS$

6. $BANX = \beta_1 AANX + \beta_2 SUPPORT + \beta_3 STRESS + \gamma SUPPORT*STRESS$

7. $PSCPST = \beta_1 PSCPRE + \beta_2 SUPPORT + \beta_3 STRESS + \gamma SUPPORT*STRESS$

8. $BSOM = \beta_1 ASOM + \beta_2 SUPPORT + \beta_3 STRESS + \gamma SUPPORT*STRESS$

Evaluation

Tables 21.1 and 21.2 contain the results of the evaluation of equation 5.

Table 21.1: The Amount of Variation in BDEPR Explained by Equation 5.
Dependent Variable: BDEPR

	Predictor(s)	R^2	ΔR^2	Sig. ΔF
a.	ADEPR	.40	.40	.000
b.	ADEPR SUPPORT STRESS	.49	.09	.000
c.	ADEPR SUPPORT STRESS SUPPORT*STRESS	.50	.01	.279

Table 21.2: The Evaluation of Coefficients Associated with Predictor Variables.

Predictor(s)		F	Sig.	β	T	Sig.
a.	ADEPR	66.70	.000	.63	8.17	.000
b.	ADEPR	31.93	.000	.50	6.39	.000
	SUPPORT			-.05	-.70	.487
	STRESS			.32	3.94	.000
c.	ADEPR	24.29	.000	.49	6.20	.000
	SUPPORT			-.06	-.79	.433
	STRESS			.32	4.02	.000
	SUPPORT*STRESS			-.08	-1.09	.279

Alpha = .05

As expected the most significant amount of variation in Depression at time 2 (40%) is explained by the baseline level of Depression established at time 1. The addition of SUPPORT and STRESS into the analysis yields a significant additional amount of explained variation (9.4%). The interaction of SUPPORT and STRESS, however, does not yield any additional amount of explained variation. The F statistic of 24.29 associated with the full model denotes that it explains a significant amount of the total variation in Depression at time 2. Finally, although the t statistic associated with the interaction of SUPPORT and STRESS does not warrant the rejection of the null hypothesis associated with the second hypothesis, as defined in terms of Depression as outcome, the t statistics associated with ADEPR and STRESS indicate that these variables are significant predictors of Depression.

Tables 22.1 and 22.2 contain the results of the evaluation of equation 6.

Table 22.1: The Amount of Variation in BANX Explained by Equation 6.
Dependent Variable: BANX

Predictor(s)		R^2	ΔR^2	Sig. ΔF
a.	AANX	.42	.42	.000
b.	AANX SUPPORT STRESS	.45	.03	.060
d.	AANX SUPPORT STRESS SUPPORT*STRESS	.45	.00	.503

Table 22.2: The Evaluation of Coefficients Associated with Predictor Variables.

Predictor(s)		F	Sig.	β	t	Sig.
a.	AANX	71.55	.000	.65	8.46	.000
b.	AANX	26.68	.000	.57	7.10	.000
	SUPPORT			-.01	-.09	.928
	STRESS			.19	2.30	.024
c.	AANX	20.01	.000	.57	6.87	.000
	SUPPORT			-.01	-.14	.889
	STRESS			.20	2.35	.021
	SUPPORT*STRESS			-.05	-.67	.503

Alpha = .05

As expected the most significant amount of variation in Anxiety at time 2 (42%) is explained by the baseline level of Anxiety established at time 1. The addition of SUPPORT and STRESS into the analysis yields a marginally significant additional amount of explained variation (3.2%). The interaction of SUPPORT and STRESS, however, does not yield any additional amount of explained variation. The F statistic of 20.01 associated with the full model denotes that it explains a significant amount of the total variation in Anxiety at time 2. Finally, although the t statistic associated with the interaction of SUPPORT and STRESS does not warrant the rejection of the null hypothesis associated with the second hypothesis, as defined in terms of Anxiety as

outcome, the t statistics associated with AANX and STRESS indicate that these variables are significant predictors of Anxiety.

Tables 23.1 and 23.2 contain the results of the evaluation of equation 7.

Table 23.1: The Amount of Variation in PSCPST Explained by Equation 7.
Dependent Variable: PSCPST

Predictor(s)		R^2	ΔR^2	Sig. ΔF
a.	PSCPRE	.44	.44	.000
b.	PSCPRE SUPPORT STRESS	.56	.12	.000
e.	PSCPRE SUPPORT STRESS SUPPORT*STRESS	.56	.00	.210

Table 23.2: The Evaluation of Coefficients Associated with Predictor Variables.

Predictor(s)		F	Sig.	β	t	Sig.
a.	PSCPRE	79.14	.000	.67	8.90	.000
b.	PSCPRE	40.96	.000	.56	7.77	.000
	SUPPORT			-.10	-1.45	.152
	STRESS			.31	4.21	.000
c.	PSCPRE	31.31	.000	.56	7.72	.000
	SUPPORT			-.11	-1.54	.127
	STRESS			.32	4.29	.000
	SUPPORT*STRESS			-.09	-1.26	.210

Alpha = .05

As expected the most significant amount of variation in psychosomatic symptoms at time 2 (44%) is explained by the baseline level of psychosomatic symptoms established at time 1. The addition of SUPPORT and STRESS into the analysis yields a significant additional amount of explained variation (12%). The interaction of SUPPORT and STRESS, however, does not yield any additional amount of explained variation. The F statistics of 31.31 associated with the full model denotes that it explains a significant amount of the total variation in psychosomatic symptoms

at time 2. Finally, although the t statistic associated with the interaction of SUPPORT and STRESS does not warrant the rejection of the null hypothesis associated with the second hypothesis, as defined in terms of psychosomatic symptoms as outcome, the t statistics associated with PSCPRE and STRESS indicate that these variables are significant predictors of psychosomatic symptoms.

Tables 24.1 and 24.2 contain the results of the evaluation of equation 8.

Table 24.1: The Amount of Variation in BSOM Explained by Equation 8.
Dependent Variable: BSOM

Predictor(s)		R^2	ΔR^2	Sig. ΔF
a.	ASOM	.40	.40	.000
b.	ASOM SUPPORT STRESS	.47	.07	.003
f.	ASOM SUPPORT STRESS SUPPORT*STRESS	.48	.01	.234

Table 24.2: The Evaluation of Coefficients Associated with Predictor Variables.

Predictor(s)		F	Sig.	β	t	Sig.
a.	ASOM	67.62	.000	.64	8.22	.000
b.	ASOM	29.11	.000	.55	7.13	.000
	SUPPORT			-.04	-.48	.631
	STRESS			.26	3.29	.001
c.	ASOM	22.29	.000	.55	7.08	.000
	SUPPORT			-.04	-.58	.565
	STRESS			.27	3.36	.001
	SUPPPRT*STRESS			-.09	-1.18	.234

Alpha = .05

As expected the most significant amount of variation in Somatization at time 2 (40%) is explained by the baseline level of Somatization established at time 1. The addition of SUPPORT and STRESS into the analysis yields a significant additional amount of explained variation (6.8%). The interaction of SUPPORT and STRESS,

however, does not yield any additional amount of explained variation. The F statistic of 22.29 associated with the full model denotes that it explains a significant amount of the total variation in Somatization at time 2. Finally, although the t statistic associated with the interaction of SUPPORT and STRESS does not warrant the rejection of the null hypothesis associated with the second hypothesis, as defined in terms of Somatization as outcome, the t statistics associated with ASOM and STRESS indicate that these variables are significant predictors of Somatization.

The second group of analyses consists of the evaluation of two sets of proposed structural equations. Each set of structural equations is composed of four equations each of which is a hypothetical function of the relationship between an outcome variable (i.e. Depression, Anxiety, Psychosomatic Symptoms, and Somatization), and a categorical predictor (e.g. Race), and a covariate (e.g. ADEPR). The two sets of equations fully test the second two hypotheses proposed in this study.

Hypothesis 3

This hypothesis proposes that the adjustment of new international students will be significantly negatively correlated with the level of discrepancy between U.S. culture and the new international students' native culture. Specifically, the mean of the adjustment scores of the new international students for whom English is the native language will be significantly lower than the mean of the adjustment scores of the new international students for whom English is not the native language. Although, as stated, this hypothesis can be evaluated using a bi-variate correlation analysis, such a procedure would not allow for the control of baseline levels of Depression, for

example.

Accordingly, this hypothesis will be tested via the Analysis of Covariance technique and using the Windows version of the Statistical Package for the Social Sciences (SPSS-7.5, 1995).

The first set of structural equations proposed for hypothesis 3 are:

9. $BDEPR = \beta_1 NATLANG2 + \beta_2 ADEPR$

10. $BANX = \beta_1 NATLANG2 + \beta_2 AANX$

11. $PSCPST = \beta_1 NATLANG2 + \beta_2 PSCPRE$

12. $BSOM = \beta_1 NATLANG2 + \beta_2 ASOM$

Evaluation

The descriptive analysis of native languages spoken by the participants indicated that only 5 individuals were native English speakers. Consequently, in the following analysis a Levene's Test of Equality of Error Variances was conducted to evaluate the feasibility of performing an ANCOVA. This test evaluates the null hypothesis that the error variance of the dependent variable is equal across the two groups.

Tables 25.1 and 25.2 contain the results of the evaluation of Equation 9.

Table 25.1. The Results of the Levene's Test

Dependent Variable	F	Sig
BDEPR	.47	.493

Table 25.2. The Results of the ANCOVA.

Predictor	F	Sig
ADEPR	65.45	.000
NATLANG2	.54	.464

The results of the Levene's test indicate that the error variances of the

dependent variable, BDEPR, is not equal across the two groups of native and non-native speakers of English. An ANCOVA of equation 9 was, nevertheless, carried out yielding no significant results.

A post-hoc analysis using the variable NATLANG1 which divides the participants into European (1) and Non-European (2) Language speakers was performed.

Tables 26.1 and 26.2 contain the results of this analysis.

Table 26.1. The Results of the Levene's Test.

Dependent Variable	F	Sig
BDEPR	6.32	.014

Table 26.2. The Results of the ANCOVA.

Predictor	F	Sig
ADEPR	63.59	.000
NATLANG1	4.74	.032

These results indicate that controlling for the effects of baseline levels of Depression, there exists a significant difference across groups in adjustment as defined by scores on the Depression scale of the SCL-90-R. The performance of an independent samples t-test (Table 26.3) revealed that the mean Depression score of speakers of a Non-European language was significantly higher than that of speakers of a European language.

Table 26.3. The Results of the Independent samples T-Test comparing the means of BDEPR across NATLANG1.

NATLANG1	Group	N	Mean	SD
BDEPR	1	16	7.81	5.66
	2	86	15.85	12.46

t = -2.52
Sig. (2-tailed) = .013

Tables 27.1 and 27.2 contain the results of the evaluation of Equation 10.

Table 27.1. The Results of the Levene's Test.

Dependent Variable	F	Sig
BANX	2.38	.126

Table 27.2. The Results of the ANCOVA.

Predictor	F	Sig
AANX	70.65	.000
NATLANG2	1.2	.276

The results of the Levene's test indicate that the error variances of the dependent variable, BANX, is not equal across the two groups of native and non-native speakers of English. A post-hoc analysis using the variable NATLANG1 which divides the participants into European and Non-European Language speakers was performed. Tables 28.1 and 28.2 contain the results of these analyses.

Table 28.1. The Results of the Levene's Test.

Dependent Variable	F	Sig
BANX	4.25	.042

Table 28.2. The Results of the ANCOVA.

Predictor	F	Sig
AANX	70.37	.000
NATLANG1	3.371	.069

These results indicate that controlling for the effects of baseline levels of Anxiety measured at time 1, there exists marginally significant differences across groups in adjustment as defined by scores on the Anxiety scale of the SCL-90-R. The performance of an independent samples t-test (Table 28.3) revealed that the mean Anxiety score of speakers of a Non-European language was marginally significantly higher than that of speakers of a European language.

Table 28.3. The Results of the Independent Samples T-Test Comparing the Means of BANX Across NATLANG1.

NATLANG1	Group	N	Mean	SD
BANX	1	16	1.94	2.29
	2	86	4.58	5.40

t = 1.92
Sig. (2-tailed) = .058

Tables 29.1 and 29.2 contain the results of the evaluation of Equation 11.

Table 29.1. The Results of the Levene's Test.

Dependent Variable	F	Sig
PSCPST	.039	.844

Table 29.2. The Results of the ANCOVA.

Predictor	F	Sig
PSCPRE	80.12	.000
NATLANG2	1.51	.222

The results of the Levene's test indicate that the error variances of the dependent variable, PSCPST, is not equal across the two groups of native and non-native speakers of English. A post-hoc analysis using the variable NATLANG1 which divides the participants into European and Non-European Language speakers was performed.

Tables 30.1 and 30.2 contain the results of these analyses.

Table 30.1. The Results of the Levene's Test.

Dependent Variable	F	Sig
PSCPST	1.42	.236

Table 30.2. The Results of the ANCOVA.

Predictor	F	Sig
PSCPRE	77.64	.000
NATLANG1	1.41	.238

These results also indicate that the error variances of the dependent variable, PSCPST, is not equal across the two groups of native and non-native speakers of English; rendering the performance of an ANCOVA unfeasible.

Tables 31.1 and 31.2 contain the results of the evaluation of Equation 12.

Table 31.1. The Results of the Levene's Test.

Dependent Variable	F	Sig
BSOM	3.71	.057

Table 31.2. The Results of the ANCOVA.

Predictor	F	Sig
ASOM	65.83	.000
NATLANG2	1.54	.218

The results of the Levene's test indicate that the error variances of the dependent variable, BSOM, is very nearly equal across the two groups of native and non-native speakers of English. The ANCOVA, however, does not indicate the existence of a significant difference in Somatization between the English and the non-English speaker participants.

A post-hoc analysis using the variable NATLANG1 which divides the participants into European and Non-European Language speakers was performed. Tables 32.1 and 32.2 contain the results of these analyses.

Table 32.1. The Results of the Levene's Test.

Dependent Variable	F	Sig
BSOM	2.65	.107

Table 32.2. The Results of the ANCOVA.

Predictor	F	Sig
ASOM	67.91	.000
NATLANG1	4.92	.029

These results indicate that although the error variances of the dependent variable, BSOM, is not equal across the groups, controlling for the effects of baseline levels of Somatization measured at time 1, there exists significant differences across groups in adjustment as defined by scores on the Somatization scale of the SCL-90-R.

The performance of an Independent Samples t-test (Table 32.3) revealed that the mean Somatization score of speakers of a Non-European language was significantly higher than that of speakers of a European language.

Table 32.3. The Results of the Independent Samples T-Test Comparing the Means of BSOM Across NATLANG1.

NATLANG1	Group	N	Mean	SD
BSOM	1	16	2.44	2.48
	2	86	5.09	4.96

t = -2.09
Sig. (2-tailed) = .039

Hypothesis 4

This hypothesis proposes that the adjustment of new international students will be significantly negatively correlated with the level of discrepancy between U.S. culture and the new international student's native culture. Specifically, the mean of the adjustment scores of the new European (or from European extraction) international students will be significantly lower than the mean of the adjustment scores of the new non-European (or from non-European extraction) international students. Although, as stated, this hypothesis can be evaluated using a bi-variate correlation analysis, such a procedure would not allow for the control of baseline levels of adjustment. Accordingly, this hypothesis will be tested via the Analysis of Covariance technique and using the Windows version of the Statistical Package for the Social Sciences (SPSS-7.5, 1995).

The set of structural equations proposed for hypothesis 4 are:

13. $BDEPR = \beta_1 ZREGION + \beta_2 ADEPR$

14. $BANX = \beta_1 ZREGION + \beta_2 AANX$

15. $PSCPST = \beta_1 ZREGION + \beta_2 PSCPRE$

16. $BSOM = \beta_1 ZREGION + \beta_2 ASOM$

Evaluation

The descriptive analysis of regions of the world represented by the participants indicated the presence of 17 European (or European extraction) and 85 non-European (or non-European extraction) individuals. In the following analyses a Levene's Test of Equality of Error Variances was conducted to evaluate the feasibility of performing an ANCOVA. This test evaluates the null hypothesis that the error variance of the dependent variable is equal across the two groups.

Tables 33.1 and 33.2 contain the results of the evaluation of Equation 13.

Table 33.1. The Results of the Levene's Test.

Dependent Variable	F	Sig
BDEPR	4.45	.037

Table 33.2. The Results of the ANCOVA.

Predictor	F	Sig
ADEPR	66.92	.000
ZREGION	3.88	.052

The results of the Levene's test indicate that the error variances of the dependent variable, BDEPR, is equal across the two groups of European and non-European participants. The results of the ANCOVA indicates the existence of a marginally significant difference in Depression between the European and the non-European participants. An independent samples t-test (Table 33.3) was performed to further investigate this difference. This analysis revealed that the mean Depression score of Non-European participants was marginally significantly higher than that of European participants.

Table 33.3. The Results of the Independent Samples T-Test Comparing the Means of BDEPR Across ZREGION.

Outcome	ZREGION	N	Mean	SD
BDEPR	1	17	9.76	7.44
	2	85	15.55	12.53

t = -1.84
Sig. (2-tailed) = .069

1: European
2: Non-European

Tables 34.1 and 34.2 contain the results of the evaluation of Equation 14.

Table 34.1. The Results of the Levene's Test.

Dependent Variable	F	Sig
BANX	2.10	.150

Table 34.2. The Results of the ANCOVA.

Predictor	F	Sig
AANX	70.70	.000
ZREGION	.50	.479

The results of the Levene's test indicate that the error variances of the dependent variable, BANX, is not equal across the two groups of European and non-European participants. The results of the ANCOVA does not indicate the existence of a significant difference in Anxiety between the European and the non-European participants.

Tables 35.1 and 35.2 contain the results of the evaluation of Equation 15.

Table 35.1. The Results of the Levene's Test.

Dependent Variable	F	Sig
PSCPST	.068	.795

Table 35.2. The Results of the ANCOVA.

Predictor	F	Sig
PSCPRE	84.17	.000
ZREGION	3.49	.065

The results of the Levene's test indicate that the error variances of the dependent variable, PSCPST, is not equal across the two groups of European and non-

European participants. The results of the ANCOVA does not indicate the existence of a significant difference in psychosomatic symptoms between the European and the non-European participants.

Tables 36.1 and 36.2 contain the results of the evaluation of Equation 16.

Table 36.1. The Results of the Levene's Test

Dependent Variable	F	Sig
BSOM	6.90	.010

Table 36.2. The Results of the ANCOVA.

Predictor	F	Sig
ASOM	67.78	.000
ZREGION	2.08	.152

The results of the Levene's test indicate that the error variances of the dependent variable, BSOM, is equal across the two groups of European and non-European participants. The results of the ANCOVA, however, do not indicate the existence of a significant difference in Somatiztion between the European and the non-European participants.

The Effects of the Three Components of Hardiness Upon Adjustment

These analyses were undertaken in order to address research question h: are there any differential effects in adjustment due to the three components of hardiness. Hardiness, as stated earlier, is comprised of Challenge, Commitment, and Control (these components have been described in detail elsewhere in this manuscript). The evaluation of the individual effects of these components was carried out through the employment of ANCOVA with a set of structural equations. The Challenge component of hardiness was evaluated using the following structural equations:

$$17. \quad BDEPR = \beta_1 ACHALL + \beta_2 ADEPR$$

18. $BANX = \beta_1 ACHALL + \beta_2 AANX$

19. $PSCPST = \beta_1 ACHALL + \beta_2 PSCPRE$

20. $BSOM = \beta_1 ACHALL + \beta_2 ASOM$

The term ACHALL was produced by dividing the sample into two groups according to their scores on the Challenge scale of the PVS-II. More specifically, those participants with scores in the top one-third were placed in the "High Challenge" cell and those participants with scores in the lowest one-third were placed in the "Low Challenge" cell. This division yielded a total of 86 scores (42 High; 44 Low).

Equation 17 was evaluated first. A Levene's test was carried out in order to assess the equality of variances between the two cells. Table 37.1 contains the results of this test.

Table 37.1. The Results of the Levene's Test.

Dependent Variable	F	Sig
BDEPR	.168	.683

Although the results of the Levene's test did not indicate equality of variances between the two cells, an ANCOVA was, nevertheless, carried out. Table 37.2 contains the results of this analysis.

Table 37.2. The Results of the ANCOVA.

Predictor	F	Sig
ADEPR	61.65	.000
ACHALL	.828	.366

The results of the ANCOVA do not indicate the existence of a significant difference in Depression between the High Challenge and the Low Challenge participants.

Tables 38.1 and 38.2 contain the results of the Levene's test and the ANCOVA as applied to equation 18.

Table 38.1. The Results of the Levene's Test

Dependent Variable	F	Sig
BANX	.558	.457

Table 38.2. The Results of the ANCOVA.

Predictor	F	Sig
AANX	95.51	.000
ACHALL	.249	.619

Although the Levene's test did not indicate equality of variances across cells, The ANCOVA procedure was, nevertheless, carried out. The results of the ANCOVA do not indicate the existence of a significant difference in Anxiety between the High Challenge and the Low Challenge participants.

Tables 39.1 and 39.2 contain the results of the Levene's test and the ANCOVA as applied to equation 19.

Table 39.1. The Results of the Levene's Test

Dependent Variable	F	Sig
PCSPST	.3.688	.058

Table 39.2. The Results of the ANCOVA.

Predictor	F	Sig
PSCPRE	61.00	.000
ACHALL	.150	.700

The Levene's test did indicate marginal equality of variances across cells. The results of the ANCOVA, however, do not indicate the existence of a significant difference in psychosomatic symptoms between the High Challenge and the Low Challenge participants.

Tables 40.1 and 40.2 contain the results of the Levene's test and the ANCOVA as applied to equation 20.

Table 40.1. The Results of the Levene's Test

Dependent Variable	F	Sig
BSOM	.548	.461

Table 40.2. The Results of the ANCOVA.

Predictor	F	Sig
ASOM	66.93	.000
ACHALL	.538	.466

Although the Levene's test did not indicate equality of variances across cells, the ANCOVA procedure was, nevertheless, carried out. The results of the ANCOVA do not indicate the existence of a significant difference in Somatization between the High Challenge and the Low Challenge participants.

It would seem, therefore, that Challenge is not a significant predictor of adjustment among international students.

The Commitment component of hardiness was evaluated using the following structural equations:

21. $BDEPR = \beta_1 ACOMM + \beta_2 ADEPR$

22. $BANX = \beta_1 ACOMM + \beta_2 AANX$

23. $PSCPST = \beta_1 ACOMM + \beta_2 PSCPRE$

24. $BSOM = \beta_1 ACOMM + \beta_2 ASOM$

The term ACOMM was produced by dividing the sample into two groups according to their scores on the Commitment scale of the PVS-II. More specifically, those participants with scores in the top one-third were placed in the "High Commitment"cell and those participants with scores in the lowest one-third were placed in the "low Commitment" cell. This division yielded a total of 78 scores (37 High; 41 Low).

Equation 21 was evaluated first. A Levene's test was carried out in order to ascertain the equality of variances between the two cells. Table 41.1 contains the

results of this test.

Table 41.1. The Results of the Levene's Test

Dependent Variable	F	Sig
BDEPR	14.40	.000

The Levene's test did indicate equality of variances between the two cells. Table 41.2 contains the results of the ANCOVA applied to equation 21.

Table 41.2. The Results of the ANCOVA.

Predictor	F	Sig
ADEPR	42.11	.000
ACOMM	19.14	.000

The results of the ANCOVA indicate the existence of a significant difference in Depression between the High Commitment and the Low Commitment participants. In order to determine the direction of the difference between the two groups, a t test for independent samples was carried out using the means of the Depression scores of the two groups. The results of this analysis are reflected in Table 41.3.

41.3. T-Test for Independent Samples: Mean Depression Scores of the High Commitment Vs. the Low Commitment Groups.

Outcome	ACOMM	N	M	SD	t	Sig
BDEPR	Low	41	20.68	13.85	4.74	.000
	High	37	8.89	6.41		

These results indicate that the Low Commitment participants, on average, obtained significantly higher depression scores than the High Commitment participants.

Tables 42.1 and 42.2 contain the results of the Levene's test and the ANCOVA as applied to equation 22.

Table 42.1. The Results of the Levene's Test

Dependent Variable	F	Sig
BANX	13.67	.000

Table 42.2. The Results of the ANCOVA.

Predictor	F	Sig
AANX	49.68	.000
ACOMM	6.47	.013

The Levene's test did indicate equality of variances across cells. The results of the ANCOVA do indicate the existence of a significant difference in Anxiety between the High Commitment and the Low Commitment participants. In order to determine the direction of the difference between the two groups, a t test for independent samples was carried out using the means of the Anxiety scores of the two groups. The results of this analysis are reflected in Table 42.3.

42.3. T-Test for Independent Samples: Mean Anxiety Scores of the High Commitment Vs. The Low Commitment Groups.

Outcome	ACOMM	N	M	SD	t	Sig
BANX	Low	41	6.27	6.58	3.49	.001
	High	37	2.24	2.56		

These results indicate that the Low Commitment participants , on average, obtained significantly higher anxiety scores than the High Commitment participants.

Tables 43.1 and 43.2 contain the results of the Levene's test and the ANCOVA as applied to equation 23.

Table 43.1. The Results of the Levene's Test

Dependent Variable	F	Sig
PCSPST	5.92	.017

Table 43.2. The Results of the ANCOVA.

Predictor	F	Sig
PSCPRE	60.51	.000
ACOMM	9.64	.003

The Levene's test indicates equality of variances across cells. The results of the ANCOVA indicate the existence of a significant difference in psychosomatic symptoms between the High Commitment and the Low Commitment participants. In

order to determine the direction of the difference between the two groups, a t test for independent samples was carried out using the means of the psychosomatic symptoms scores of the two groups. The results of this analysis are reflected in Table 43.3.

43.3. T-Test for Independent Samples: Mean Psychosomatic Symptoms Scores of the High Commitment Vs. the Low Commitment Groups.

Outcome	ACOMM	N	M	SD	t	Sig
PSCPST	Low	41	21.90	18.67	3.31	.001
	High	37	10.84	8.40		

These results indicate that the Low Commitment participants, on average, obtained significantly higher psychosomatic symptoms scores than the High Commitment participants.

Tables 44.1 and 44.2 contain the results of the Levene's test and the ANCOVA as applied to equation 24.

Table 44.1. The Results of the Levene's Test

Dependent Variable	F	Sig
BSOM	46.88	.000

Table 44.2. The Results of the ANCOVA.

Predictor	F	Sig
ASOM	44.91	.000
ACOMM	12.51	.001

The Levene's test indicates equality of variances across cells. The results of the ANCOVA indicate the existence of a significant difference in Somatization between the High Commitment and the Low Commitment participants. In order to determine the direction of the difference between the two groups, a t test for independent samples was carried out using the means of the Somatization scores of the two groups. The results of this analysis are reflected in Table 44.3.

44.3. T-Test for Independent Samples: Mean Somatization Scores of the High Commitment Vs. The Low Commitment Groups.

Outcome	ACOMM	N	M	SD	t	Sig
BSOM	Low	41	7.00	5.80	3.82	.000
	High	37	3.08	2.43		

These results indicate that the Low Commitment participants, on average, obtained significantly higher Somatization scores than the High Commitment participants.

It would seem, therefore, that Commitment is a significant predictor of adjustment among international students. In order to evaluate the role of Commitment in predicting adjustment within the context of stress and in interaction with stress, a series of MR analyses were applied to the following equations:

25. $BDEPR = \beta_1 ADEPR + \beta_2 COMM + \beta_3 STRESS + \gamma COMM*STRESS$

26. $BANX = \beta_1 AANX + \beta_2 COMM + \beta_3 STRESS + \gamma COMM*STRESS$

27. $PSCPST = \beta_1 PSCPRE + \beta_2 COMM + \beta_3 STRESS + \gamma COMM*STRESS$

28. $BSOM = \beta_1 ASOM + \beta_2 COMM + \beta_3 STRESS + \gamma COMM*STRESS$

Evaluation

Tables 45.1 and 45.2 contain the results of the evaluation of equation 25.

Table 45.1. The Amount of Variation in BDEPR Explained by Equation 25.
Dependent Variable: BDEPR

	Predictor(s)	R^2	ΔR^2	Sig. ΔF
a.	ADEPR	.39	.39	.000
b.	ADEPR COMM STRESS	.534	.145	.000
c.	ADEPR COMM STRESS COMM*STRESS	.540	.007	.243

Table 45.2. The Evaluation of Coefficients Associated with Predictor Variables.

Predictor(s)		F	Sig.	β	t	Sig.
a.	ADEPR	63.43	.000	.62	7.97	.000
b.	ADEPR	37.37	.000	.48	6.40	.000
	COMM			-.25	-3.32	.001
	STRESS			.25	3.15	.002
c.	ADEPR	28.48	.000	.49	6.37	.000
	COMM			-.06	-3.46	.001
	STRESS			.32	2.78	.007
	COMM*STRESS			-.08	-1.17	.243

Alpha = .05

As expected the most significant amount of variation in Depression at time 2 (39%) is explained by the baseline level of Depression established at time 1. The addition of Commitment and Stress into the analysis yields a significant additional amount of explained variation (15%). The interaction of Commitment and Stress, however, does not yield any additional amount of explained variation. The F statistic of 28.48 associated with the full model denotes that it explains a significant amount of the total variation in Depression at time 2. Finally, although the t statistic associated with the interaction of Commitment and Stress is not significant, the t statistics associated with ADEPR, Commitment, and Stress indicate that these variables are significant predictors of Depression.

Tables 46.1 and 46.2 contain the results of the evaluation of equation 26.

Table 46.1. The Amount of Variation in BANX Explained by Equation 26.
Dependent Variable: BANX

Predictor(s)		R^2	ΔR^2	Sig. ΔF
a.	AANX	.42	.42	.000
b.	AANX COMM STRESS	.47	.05	.007
c.	AANX COMM STRESS COMM*STRESS	.48	.01	.228

Table 46.2. The Evaluation of Coefficients Associated with Predictor Variables.

Predictor(s)		F	Sig.	β	t	Sig.
a.	AANX	71.55	.000	.65	8.46	.000
b.	AANX	29.41	.000	.56	7.11	.000
	COMM			-.17	-2.13	.036
	STRESS			.14	1.66	.101
c.	AANX	22.53	.000	.56	7.15	.000
	COMM			-.18	-2.28	.025
	STRESS			.11	1.33	.188
	COMM*STRESS			-.09	-1.21	.228

Alpha = .05

As expected the most significant amount of variation in Anxiety at time 2 (42%) is explained by the baseline level of Anxiety established at time 1. The addition of Commitment and Stress into the analysis yields a significant additional amount of explained variation (5.7%). The interaction of Commitment and Stress, however, does not yield any additional amount of explained variation. The F statistic of 22.53 associated with the full model denotes that it explains a significant amount of the total variation in Anxiety at time 2. Finally, although the t statistic associated with the interaction of Commitment and Stress is not significant, the t statistics associated with AANX and Commitment indicate that these variables are significant predictors of

Anxiety.

Tables 47.1 and 47.2 contain the results of the evaluation of equation 27.

Table 47.1. The Amount of Variation in PSCPST Explained by Equation 27.
Dependent Variable: PSCPST

Predictor(s)		R^2	ΔR^2	Sig. ΔF
a.	PSCPRE	.44	.44	.000
b.	PSCPRE COMM STRESS	.56	.12	.000
c.	PSCPRE COMM STRESS COMM*STRESS	.58	.02	.027

Table 47.2. The Evaluation of Coefficients Associated with Predictor Variables.

Predictor(s)		F	Sig.	β	t	Sig.
a.	PSCPRE	79.14	.000	.67	8.90	.000
b.	PSCPRE	41.00	.000	.55	7.72	.000
	COMM			-.11	-1.46	.147
	STRESS			.31	3.99	.000
c.	PSCPRE	33.26	.000	.54	7.66	.000
	COMM			-.13	-1.78	.079
	STRESS			.27	3.51	.001
	COMM*STRESS			-.15	-2.24	.027

Alpha = .05

As expected the most significant amount of variation in psychosomatic symptoms at time 2 (44%) is explained by the baseline level of psychosomatic symptoms established at time 1. The addition of Commitment and Stress into the analysis yields a significant additional amount of explained variation (12%). The interaction of Commitment and Stress also yields an additional significant amount of explained variation (2.2%). The F statistic of 33.26 associated with the full model denotes that it explains a significant amount of the total variation in psychosomatic symptoms at time 2. The t statistic associated with the interaction of Commitment and

Stress is significant indicating that the effects of this interaction upon the development of psychosomatic symptoms are not due to chance alone. The t statistics associated with PSCPRE and Stress also indicate that these variables are significant predictors of psychosomatic symptoms.

Tables 48.1 and 48.2 contain the results of the evaluation of equation 28.

Table 48.1. The Amount of Variation in BSOM Explained by Equation 28.
Dependent Variable: BSOM

Predictor(s)		R^2	ΔR^2	Sig. ΔF
a.	ASOM	.40	.40	.000
b.	ASOM COMM STRESS	.49	.09	.000
d.	ASOM COMM STRESS COMM*STRESS	.50	.01	.241

Table 48.2. The Evaluation of Coefficients Associated with Predictor Variables.

Predictor(s)		F	Sig.	β	t	Sig.
a.	ASOM	67.62	.000	.64	8.22	.000
b.	ASOM	31.64	.000	.55	7.24	.000
	COMM			.16	-2.06	.042
	STRESS			.22	2.68	.009
c.	ASOM	24.17	.000	.55	7.22	.000
	COMM			-.17	-2.21	.030
	STRESS			.19	2.34	.021
	COMM*STRESS			-.09	-1.18	.241

Alpha = .05

As expected the most significant amount of variation in Somatization at time 2 (40%) is explained by the baseline level of Somatization established at time 1. The addition of Commitment and Stress into the analysis yields a significant additional amount of explained variation (9%). The interaction of Commitment and Stress, however, does not yield any additional amount of explained variation. The F statistics

of 24.17 associated with the full model indicates that it explains a significant amount of the total variation in Somatization at time 2. Although the t statistic associated with the interaction of Commitment and Stress is not significant, the t statistics associated with ASOM and Commitment, and Stress indicate that these variables are significant predictors of Somatization.

The Control component of hardiness was examined using the following structural equations:

29. $BDEPR = \beta_1 ACONT + \beta_2 ADEPR$

30. $BANX = \beta_1 ACONT + \beta_2 AANX$

31. $PSCPST = \beta_1 ACONT + \beta_2 PSCPRE$

32. $BSOM = \beta_1 ACONT + \beta_2 ASOM$

The term ACONT was produced by dividing the sample into two groups according to their scores on the Control scale of the PVS-II. More specifically, those participants with scores in the top one-third were placed in the "High Control" cell and those participants with scores in the lowest one-third were placed in the "Low Control" cell. This division yielded a total of 71 scores (35 High; 36 Low).

Equation 29 was evaluated first. A Levene's test was carried out in order to assess the equality of variances between the two cells. Table 49.1 contains the results of this test.

Table 49.1. The Results of the Levene's Test.

Dependent Variable	F	Sig
BDEPR	2.74	.102

Although the Levene's test did not indicate equality of variances between the two cells, an ANCOVA was, nevertheless, carried out. Table 49.2 contains the results

of the ANCOVA applied to equation 29.

Table 49.2. The Results of the ANCOVA.

Predictor	F	Sig
ADEPR	45.45	.000
ACONT	2.52	.117

The results of the ANCOVA do not indicate the existence of a significant difference in Depression between the High Control and the Low Control participants.

Tables 50.1 and 50.2 contain the results of the Levene's test and the ANCOVA as applied to equation 30.

Table 50.1. The Results of the Levene's Test.

Dependent Variable	F	Sig
BANX	4.55	.036

Table 50.2. The Results of the ANCOVA.

Predictor	F	Sig
AANX	51.23	.000
ACONT	1.73	.193

The Levene's test indicates equality of variances across cells. The results of the ANCOVA, however, do not indicate the existence of a significant difference in Anxiety between the High Control and the Low Control participants.

Tables 51.1 and 51.2 contain the results of the Levene's test and the ANCOVA as applied to equation 31.

Table 51.1. The Results of the Levene's Test

Dependent Variable	F	Sig
PCSPST	2.01	.161

Table 51.2. The Results of the ANCOVA.

Predictor	F	Sig
PSCPRE	57.04	.000
ACONT	6.00	.017

Although the Levene's test did not indicate equality of variances across cells, the ANCOVA was, nevertheless, carried out. The results of the ANCOVA indicate

the existence of a significant difference in psychosomatic symptoms between the High Control and the Low Control participants. In order to determine the direction of the difference between the two groups, a t-test for independent samples was carried out using the means of the psychosomatic symptoms scores of the two groups. The results of this analysis are reflected in Table 51.3.

51.3. T-Test for Independent Samples: Mean Psychosomatic Symptoms Scores of the High Control Vs. The Low Control Groups.

Outcome	ACONT	N	M	SD	t	Sig
PSCPST	Low	36	22.83	20.47	1.80	.076
	High	35	15.40	13.42		

Although these results indicate that the Low Control participants , on average, obtained higher psychosomatic symptoms scores than the High Control participants; this difference was only marginally significant. In order to evaluate the role of Control in predicting psychosomatic symptoms within the context of stress and in interaction with stress, a MR analysis was carried out using the following equation:

31a. $PSCPST = \beta_1 PSCPRE + \beta_2 CONT + \beta_3 STRESS + \gamma CONT*STRESS$

Evaluation

Tables 51.4 and 51.5 contain the results of the evaluation of equation 31a.

Table 51.4. The Amount of Variation in PSCPST Explained by Equation 31a.
Dependent Variable: PSCPST

	Predictor(s)	R^2	ΔR^2	Sig. ΔF
a.	PSCPRE	.44	.44	.000
b.	PSCPRE CONT STRESS	.56	.12	.000
c.	PSCPRE CONT STRESS CONT*STRESS	.59	.03	.006

Table 51.5. The Evaluation of Coefficients Associated with Predictor Variables.

Predictor(s)		F	Sig.	β	t	Sig.
a.	PSCPRE	79.14	.000	.67	8.90	.000
b.	PSCPRE	41.48	.000	.56	7.81	.000
	CONT			-.12	-1.67	.098
	STRESS			.30	4.04	.000
c.	PSCPRE	35.34	.000	.55	7.86	.000
	CONT			-.11	-1.57	.119
	STRESS			.27	3.64	.000
	CONT*STRESS			-.19	-2.83	.006

Alpha = .05

As expected the most significant amount of variation in psychosomatic symptoms at time 2 (44%) is explained by the baseline level of psychosomatic symptoms established at time 1. The addition of Control and Stress into the analysis yields a significant additional amount of explained variation (12%). The interaction of Commitment and Stress also adds an additional significant amount of explained variation (3.4%). The F statistic of 35.34 associated with the full model indicates that it explains a significant amount of the total variation in psychosomatic symptoms at time 2. The t statistic associated with the interaction of Control and Stress is significant, denoting that Control moderates the relationship between stress and psychosomatic symptoms such that the higher the scores on the Control scale of the PVS-II, the lower the scores on the SUNYA-PSC. Finally, the t statistics associated with PSCPRE and Stress indicates that these variables are significant predictors of psychosomatic symptoms.

Tables 52.1 and 52.2 contain the results of the Levene's test and the ANCOVA as applied to equation 32.

Table 52.1. The Results of the Levene's Test

Dependent Variable	F	Sig
BSOM	11.92	.001

Table 52.2. The Results of the ANCOVA.

Predictor	F	Sig
ASOM	45.38	.000
ACONT	2.64	.109

The Levene's test indicates equality of variances across cells. The results of the ANCOVA, however, do not indicate the existence of a significant difference in Somatization between the High Control and the Low Control participants.

Role of Demographic Factors in the Adjustment of International Students

The following analyses were carried out in order to address research question g: are there any demographic characteristics that help predict the adjustment of new international students. In addition to the two demographic characteristics tested in the evaluation of hypotheses 3 and 4 (Native Language and Region of Origin); the effects of the following demographic variables upon adjustment of international students were also evaluated: Race , Age, Sex, Relatedness, Marital Status, Father's Education, Mother's Education, Parents Educated in the United States, Acquaintance in the Lansing/East Lansing area, Proficiency in the English language, and Similarity of Current Accommodations to Those in the Country of Origin. Of these, only Acquaintance in the Lansing/East Lansing area was found to be a significant predictor of psychosomatic symptoms controlling for the effects of baseline levels of psychosomatic symptoms.

Table 53.1 and 53.2 contain the results of the Levene's test and the ANCOVA as applied to equation 33.

33. $PSCPST = \beta_1 ACQELAN + \beta_2 PSCPRE$

Table 53.1. The Results of the Levene's Test

Dependent Variable	F	Sig
PSCPST	6.35	.013

Table 53.2. The Results of the ANCOVA.

Predictor	F	Sig
PSCPRE	63.45	.000
ACQELAN	6.10	.015

The Levene's test did indicate equality of variances across cells. The results of the ANCOVA also indicate the existence of a significant difference in psychosomatic symptoms scores between those participants with acquaintance in the Lansing/East Lansing area versus those with no acquaintance in the Lansing/East Lansing area. In order to determine the direction of the difference between the two groups, a t test for independent samples was carried out using the means of the psychosomatic symptoms scores of the two groups. The results of this analysis are reflected in Table 53.3.

53.3. T-Test for Independent Samples: Mean Psychosomatic Symptoms Scores of the With Acquaintance in the Lansing/East Lansing area Vs. No Acquaintance in the Lansing/East Lansing area Participants.

Outcome	ACQELAN	N	M	SD	t	Sig
PSCPST	No	53	19.08	16.32	2.28	.025
	Yes	47	12.43	12.27		

These results indicate that those participants with no acquaintances in the Lansing/East Lansing area, on average, obtained significantly higher psychosomatic symptoms scores than participants with acquaintances in the Lansing/East Lansing area.

CHAPTER V

DISCUSSION

"The great tragedy of science: the slaying of an original, beautiful hypothesis by an ugly fact."

Thomas Huxley

The present study was motivated by three general objectives. First, the limited and contradictory nature of current literature on the health status of international students enrolled in colleges and universities in the United States and other countries represents a gap in empirical knowledge regarding the adjustment of this group to their new environment. This study was designed to assess the prevalence of depression, anxiety, psychosomatic symptoms and somatization tendencies among this population. Second, the present study was designed to elicit data on the major sources of stress in the lives of new international students as well as salient sources of social support. Third, the dearth of empirical attention to factors explaining the variation in adjustment of international students limits the ability of those involved in the governance and welfare of this group to select individuals likely to adjust comfortably to studies aborad; prepare those likely to exhibit adverse reactions to the stress of such an undertaking; and counsel international students presenting to college counseling centers with various types of adjustment disorders.

The first two objectives formed the bases of the following three research questions: a) in terms of physical and psychological symptoms, how do international students adjust to their new environment; b) what are the main sources of stress and

significant sources of social support among international students; and c) is there a relationship between immediate post-arrival health and 12-week post-arrival health of international students.

The third objective was operationalized as an extension of a well established line of research examining the roles of hardiness and perceptions of social support in the relationship between stress and illness. This objective formed the basis of the following research questions: d) does hardiness play a role in the adjustment of new international students; e) do perceptions of social support play a role in the adjustment of new international students; f) does the interaction of perceptions of hardiness and stress play a role in the adjustment of new international students; g) does the interaction of perceptions of social support and stress play a role in the adjustment of new international students; h) are there any demographic characteristics that help predict the adjustment of new international students; and i) are there any differential effects due to the three components of hardiness on the adjustment of new international students. As well as addressing these questions, the present study was designed to assess the empirical status of four hypotheses. The exact nature of these predictions as well as their empirical status will be discussed in this section.

The state of physical and psychological health of international students has not been the subject of many empirical studies. The available data can be described as contradictory in that some studies have described this population as a physically and psychologically resilient group with few adjustment related disorders (e.g. Allen & Cole, 1987). Other studies have painted a sharply contrasting picture of a group that is

afflicted with a wide range of adjustment problems manifested by mental and physical symptoms (Gunn, 1985; Ward, 1961). Foreign Student Syndrome (FSS) was a label applied by Lyle Ward to a set of depression-like symptoms that he observed in the course of an archival study of the health status of international students. Other research into the effects of geographical displacement on physical and psychological health, lead to the development of concepts such as Lysgaard's (1955) U-Curve hypothesis and Oberg's (1960) Culture Shock. These, mostly overlapping, concepts suggest that the process of a sojourner's adjustment to his or her new environment is characterized by an initial period of euphoria and excitement followed by a period of disillusionment and maladjustment which is then replaced by a normal sense of well-being typical of others in the environment.

A large body of empirical research has consistently demonstrated a significant link between stress and a range of physical and psychological symptoms. This relationship, though significant, is not universal. This variation in adjustment of those exposed to stress has motivated the exploration and examination of factors which may moderate, mediate, or otherwise influence this relationship. A set of individual differences have been conceptualized and tested in the past two decades as possible mitigating factors in the stress-illness link. Two such factors are hardiness proposed by Kobasa and her colleagues in 1979 and social support (Anotonsovsky, 1979). According to Kobasa's theory hardy individuals are significantly less likely to develop stress related symptoms when faced with major changes in their circumstances. The personality of an hardy individual, according to this theory, is characterized by a) a

sense commitment to personally meaningful goals and values; b) a deeply held belief that he/she can influence the outcome of personally relevant events; and c) a belief that change is normal.

The role of social support as a buffer against the deleterious effects of stress was first explored within the sociological literature in the early 1970's. This literature is mostly based upon the premise that individuals with access, actual or perceived, to such social structures as family/friends, counseling centers, employment/placement offices, financial institutions, etc. are less likely to exhibit stress related symptoms.

The Health Status of International Students

The results of the present study are generally consistent with that portion of the literature which describes a healthy and resilient population. Overall, the depression, anxiety, and somatization scores of the group are well within the normal range. This state of affairs was found to be true both during the period immediately after arrival and twelve weeks post-arrival. While the results of the psychosomatic symptoms surveys were less encouraging, there was still reason to believe that as a group the international students fared better than their domestic counterparts. For example, in a survey of 27 colleges and universities, Andrasik, Holroyd, and Abell (1979), found that 52 percent of the domestic students surveyed reported headaches at least once or twice a week. This compares favorably with the frequency of headaches among the participants of the present study. A number of other symptoms and morbidities with demonstrated association with stress such as common cold, upper respiratory infections, cold sores, backaches, and insomnia exhibited elevated rates.

Although the overall results are hardly a cause for alarm, a more detailed analysis of the results revealed the existence of moderate to severe levels of depression and anxiety among roughly a fifth of the participants. A small number of the participants reported having experienced suicidal ideations after their arrival in the United States and these thoughts had persisted twelve weeks into their stay. Loneliness and hopelessness about the future were also relatively common experiences among the participants.

Although these results are consistent with Ward's observations referred to as the Foreign Student Syndrome, the fact that the majority of the participants did not report clinical levels of depression, anxiety, or physical symptoms is also consistent with the overarching observation that the correlation between exposure to stress and development of symptoms, though significant, is not universal.

Significant Sources of Stress and Social Support

The results of the present study are consistent with those of other studies (Yang & Clum, 1984; for example) in that they describe a population deeply dedicated to the pursuit of academic excellence. It is not surprising, therefore, to find that academic pressures is ranked as the most significant source of stress for this group. Contrary to what might be expected, cultural adjustment and interpersonal difficulties were ranked third and fifth respectively as major sources of stress. This apparent paradox is resolved when one takes into account that the majority of the sample consisted of Asian students. One can speculate that the presence of relatively large numbers of Asians both as students enrolled at MSU, and in the local community

facilitate the transition of these students into the American society by reducing the need for immediate immersion into the host culture. This speculation is fortified by the finding that contact with sources representing one's own culture in the U.S. is ranked as the second most salient source of social support by the participants.

The Role of Hardiness in the Adjustment of New International Students

The role of hardiness in the adjustment of new international students was examined through the evaluation of the hypothesis predicting that the hardiness level of new international students will significantly moderate the relationship between stress and adjustment. Specifically, it was predicted that among new international students with higher levels of hardiness, stress will be unrelated to adjustment; whereas among new international students with lower levels of hardiness, stress will be significantly related in a negative direction with adjustment.

Although Kobasa's hardiness theory forms the empirical basis of this hypothesis, an accurate comparison of the results of this study with those reported by Kobasa and her colleagues is rendered difficult because of differences in the operationalization of the outcome variable. More specifically, Kobasa defined adjustment in terms of composite scores on the Seriousness of Illness Survey (Wyler, Masuda, & Holmes, 1968). This instrument does not yield scores on specific domains such as depression or anxiety. Furthermore, because Kobasa's samples consisted exclusively of males, she excluded all typically feminine symptoms and syndromes. The results of the present study were consistent with Kobasa's findings only when adjustment was defined in terms of psychosomatic symptoms. When adjustment was

defined in these terms, hardiness was demonstrated to significantly moderate the harmful effects of stress. This finding is consistent with those reported by other investigators (Bernard & Belinsky, 1993; Williams, Wiebe, & Smith, 1992; and Banks & Gannon, 1988, for example) who defined adjustment in terms of self-reports of physical symptoms. The results of the present study also revealed that the baseline levels of depression, anxiety, and somatization were all significant predictors of depression, anxiety, and somatization. Although this finding is consistent with those frequently cited in the literature, the insignificant amount of change in participants' self reports of depression, anxiety, psychosomatic symptoms, and somatization between the time of arrival and twelve weeks post-arrival is inconsistent with Lysgaard's U-Curve hypothesis. It is possible, however, that the deterioration in the health of international students, as predicted by Lysgaard, either occurs some time after the twelfth week of stay in the new country (as was found by Parr, Bradley, and Bingi, 1992) or, alternatively, that the entire U-Curve process begins and ends during the twelve weeks so that by the time the second phase of data collection was completed the participants had re-adjusted. The latter possibility is less likely, however, given that the survey instruments instructed the participants to describe their symptoms since the first survey.

Other noteworthy results obtained in this study were the finding that although stress consistently and significantly predicted adjustment (except when adjustment was defined in terms of anxiety symptoms), with the exception of adjustment defined in terms of psychosomatic symptoms, hardiness did not appear to exert either a main

effect on adjustment or a moderating effect on the relationship between stress and adjustment. The latter finding is inconsistent with both the early general consensus prevalent in the stress-illness literature centered around the belief that hardiness exerted a direct, rather than a stress-buffering, effect on the harmful effects of stress, and more recent studies that have reported findings supportive of the conceptualization of hardiness as a moderator of the relationship between stress and illness.

The finding that hardiness moderates the experience of psychosomatic symptoms but not somatization among new international students is paradoxical considering the high correlation between these two variables. The literature on the psychological symptoms of Asian students indicates that cultural factors increase the likelihood that, among this population, emotional conflicts will be experienced physically. It is thus reasonable to expect that the self-report of somatization would mirror that of psychosomatic symptoms. A possible explanation for this finding is that in the present study, psychosomatic symptoms are defined in terms of clearly defined conditions such as cold sores, common colds, laryngitis, etc. whereas somatization is defined in terms of more ambiguous experiences such as heavy feelings in arms and legs, and feeling weak in parts of your body.

As with previous studies which have examined the hardiness components separately (Wiebe, Williams, & Smith, 1992; Hull, VanTreuren, & Virnelli, 1987), the predicted relationship between hardiness and adjustment, was more consistently demonstrated for commitment and, to a lesser degree, for control than for challenge. More specifically, it was found that participants with higher scores on the commitment

component of hardiness consistently and significantly reported lower levels of depression, anxiety, psychosomatic symptoms, and somatization; while participants with higher scores on the control component reported significantly lower levels of psychosomatic symptoms. These findings were obtained even while controlling for the effects of baseline levels of these symptoms. In contrast with the results of multiple regression carried out to evaluate the role of hardiness in the relationship between stress and adjustment, the assessment of the role of commitment in this relationship revealed that with the exception of psychosomatic symptoms, commitment exerted a main effect on adjustment; while consistent with those findings, it was demonstrated that commitment moderated this relationship. Control was also found to be a moderator of the relationship between stress and self-reports of psychosomatic symptoms.

There are at least three potential explanations for these findings. First, given that the participants in this study consist of a group of academically committed individuals, the majority of whom are from cultures which ascribe high value to educational success, it seems reasonable to suggest that for this group commitment to academic success would result in elevated levels of scholarly behaviors. In this way commitment can be viewed as a trait which exerts its stress-buffering effects by stimulating adaptive coping behaviors. This indirect effect of commitment in the relationship between stress and adjustment cannot be evaluated in this study since no data regarding the scholarly behavior or academic achievement of the participants were collected. This might form the basis of a future study. Second, as was suggested by

Williams et al. (1992) and supported by Contrada's (1989) findings, the insignificant role of the challenge component of hardiness may be due to the possibility that unlike commitment and control, challenge exerts its health-enhancing effects through means other than adaptive coping processes. More specifically, challenge may impact appraisal of stress and thus have a beneficial effect on physiological reactivity. If this is in fact the case, then the self-report survey of health would not yield the kind of data necessary to assess physiological reactivity. Rather, it is possible that while the variation in physiological reactivity is accounted for significantly by the challenge component, the variation in self-reports of depression, anxiety, and psychosomatic symptoms is not explained adequately by this trait among a group whom despite low levels of aversion to change does not, nevertheless, engage in adaptive coping behaviors such as those elicited by commitment. Third, as suggested by Hull et al. (1987), it is possible that the relative lack of significant findings using the challenge component is due to psychometric inadequacies of the scale.

The Role of Social Support in the Adjustment of New International Students

It was hypothesized that new international students' perceptions of social support will significantly moderate the relationship between stress and adjustment. Specifically, it was predicted that among new international students with more positive perceptions of social support, stress will be unrelated to adjustment, whereas among new international students with less positive perceptions of social support, stress will be significantly related in a negative direction with adjustment. Unlike hardiness, social support was demonstrated to be an entirely unproductive predictor of adjustment in

the participants of this study. The results of the study failed to demonstrate the utility of social support either as a unique predictor of adjustment, (regardless of the manner in which adjustment was defined) or as a moderator of the relationship between stress and illness. There are at least two potential explanations for this finding. First, all the participants in the present study have exhibited both the willingness and the ability to separate from their significant sources of social support in pursuit of achievement of their individual academic goals. Second, the majority of the participants in this study were Asian. The descriptive analysis of the Index of Social Support indicates that this group does not perceive of community based and student organizations as entities with essential roles in their adjustment to their new environments. Comparative cultural studies have also consistently described this population as one that is reluctant to seek help from sources outside of the immediate family (Furnham & Trezise, 1983, for example). It seems intuitively plausible to suggest that, on aggregate, this group is characterized by mostly self-reliant individuals who do not rely upon external sources of support for the attainment of adaptive functioning.

The Roles of Native Language and Geographical Region of Origin

It was hypothesized that the adjustment of new international students will be significantly negatively correlated with the level of discrepancy between U.S. culture and the new international students' native culture. Specifically, it was predicted that the mean of the adjustment scores of the new international students for whom English is the native language will be significantly lower than the mean of the adjustment scores of the new international students for whom English is not the native language.

It was also hypothesized that the adjustment of new international students will be significantly negatively correlated with the level of discrepancy between U.S. culture and the new international student's native culture. Specifically, it was predicted that the mean of the adjustment scores of the new European (or from European extraction) international students will be significantly lower than the mean of the adjustment scores of the new non-European (or from non-European extraction) international students. The results of this study were consistent with others reporting a greater degree of difficulty in adjustment among non-native speakers of English and among students from countries outside of Europe (Akka, 1967; Brislin, 1981; and Church, 1982, for example). When adjustment was defined in terms of depression it was found that participants whose native language belonged to the European family of languages exhibited significantly fewer depressive symptoms than non-European language participants. This finding was also true when participants were divided into two regions based upon European and non-European countries of origin. This state of affairs also approached significance when adjustment was defined in terms of anxiety symptoms. It must be noted, however, that the discovery of this discrepancy is in reality not as significant as it might appear given the generally satisfactory state of adjustment of non-native speakers of English and students form non-European countries.

Strengths and Limitations

The present study is characterized by at least the following eight strengths. First, efforts were made to select instruments with highly established statistical

properties and/or instruments specifically designed for use with international students. Unlike a fairly large number of previous studies examining the relationship between stress and adjustment, the present study employed a broad definition of this vague construct thereby increasing the construct validity of the study. Third, in response to a frequently cited weakness of the hardiness literature as well as the literature on the health status of international students, the measurement of the baseline levels of adjustment variables allowed for the controlling of the effects of these factors when evaluating the roles of other predictor variables of interest. The results of the present study were derived from a sample that is demographically similar to the population as a whole thus enhancing the generalizability of the results. Fifth, the inclusion of every member of the population of interest in the pool of potential participants also enhanced the external validity of the findings. The collection of data on a fairly large set of variables with potentially confounding effects allowed for the assessment of the roles of these factors as well as for the controlling of any such effects. Seventh, in contrast with a large number of previous hardiness studies, the present study examined the roles of the components of hardiness. Finally, various statistical techniques and procedures were applied to appropriate data (i.e. continuous versus categorical).

This study contained several limitations one of which was the employment of a survey design. Along with the problem of survey bias associated with this design, the measurement of symptomology is sometimes contaminated by a set of factors that have typically influenced the experiencing and endorsement of such experiences. Two such factors are neuroticism (Benishek, 1994) and cultural background (Chen, 1993). In

addition, no information about utilization of prophylactic and/or ameliorative interventions was collected. This possible confounding factor would have allowed the investigator to control for the effects of such extraneous variables as ingestion of anti-depressants or the receiving of counseling and psychotherapy from a mental health professional. Finally, the problem of unequal variances between groups may have been eliminated if the sample size was larger.

Implications for Future Research and Practice

The implications of the present study can be categorized in terms of implications for college counseling centers and administrators of international student programs; and also in terms of implications for those interested in understanding the factors contributing to the maladjustment and academic difficulties of domestic students.

Although the results of the present study are consistent with that portion of the literature describing a rather robust group, there is a small group of international students, perhaps about twenty percent, who experience moderate to severe adjustment difficulties. Given the differences in help-seeking perceptions and behaviors among the various sub-groups of international students, it behooves the office of international students and scholars to implement a brief screening procedure in order to identify those new international students with adjustment problems during the initial phases of their stay in the host country. International students from European countries and those from European extraction may have the potential to become effective peer counselors. With basic training in counseling skills, they could

serve as group leaders for support groups. Furthermore, they could serve as role models for helping others understand how to meet basic needs.

The finding that having friends and acquaintances in the Lansing/East Lansing area prior to arrival is significantly associated with the reporting of fewer psychosomatic symptoms suggests that the development of a mentoring program could be of value in the facilitation of adjustment of new international students to life and study in the United States. Such a program could be staffed with volunteers from a group of international students with at least one year of residence in the United States. It is possible, of course, that new international students are provided access to mentors and sponsors during the orientation week organized by the office of international students. It seems, however, that providing the new international student with a name, phone number, and/or e-mail address of a sponsor prior to their departure from their country might have the desired adjustment-inducing effects sought by these programs. The development of such a program can also help ameliorate the experience of loneliness prevalent among roughly a quarter of the participants.

The finding that academic pressures comprise the most pervasive source of stress for this group (along with the finding that "it would be the biggest shame for me if I fail in school" is the most stressful thought reported by roughly half the participants) would suggest that some members of this group may be more at risk for suicidal ideations and attempts. It would seem, therefore, that close monitoring of the grades of these students would enable administrators to identify those at risk and allow the counseling center staff to provide such services as may be necessary.

Roughly four-fifth of the participants in this study indicated problems in adjusting to American cuisine. Given that the majority of the participants reside in university residence halls, it seems reasonable to recommend that those responsible for the development of menus receive training in the nuances of various ethnic cuisines. It may also be practical to provide these students with access to kitchen facilities.

Finally, the understanding of the factors contributing to the robustness and academic success of international students despite the repeated observations that this group has the ability to persevere, sometimes despite what may seem like insurmountable odds, may enable future investigators to generate suggestions not only for the facilitation of adjustment of domestic students to the rigors and demands of college level work, but also to assist administrators in selecting those candidates with greater potential for successful adjustment to university life.

Future research in the area of individual differences in the adjustment of international students can address the somewhat surprising finding that perceptions of social support did not play a role in the adjustment of this group. Research can also examine the role of other individual differences such as openness to experience, neuroticism, and extraversion in the stress-illness link. Another potentially fruitful project would be to further investigate the finding that hardiness appears to play a mitigating role in the development of psychosomatic symptoms but not in the development of such psychological symptoms as depression, anxiety, and somatization. In order to avoid the problems associated with self-report of symptoms, future researchers can chose more objective means of assessing adjustment. These can

include the use of laboratory procedures to assess the levels of such physiological factors as Immunoglobulin-A and stress hormones such as Adrenocorticotropine.

APPENDICES

APPENDIX A

Initial Contact Letter

Dear New International Student,

I feel privileged to be among the first Americans to welcome you to our country. It is my sincere wish that your stay here will be filled with success and memorable experiences. As a former international student (in Great Britain and the United States) I feel a special sense of camaraderie with you. By virtue of having left your family and country in pursuit of knowledge and education, you have joined a segment of the U.S. college student population that has experienced continuous growth both in numbers, and more importantly in its contributions to the intellectual and cultural atmosphere of this country's institutes of higher education.

It is safe to assume that in the coming days, weeks, and months, you will encounter new circumstances and situations. You may, in fact, have already experienced such changes in your living arrangements, language, or means of transportation. These new situations can be filled with opportunities and be rather exciting. They can also require some degree of adaptation and adjustment.

You are one of a small group of newly arrived international students at Michigan State University who is being asked to provide information on the relationship between changes in life circumstances and physical and psychological symptoms. Participation in this study is voluntary and is not, in any way, related to your enrollment or education at MSU. There are no penalties or any adverse consequences for not participating.

You may be assured of complete confidentiality. The questionnaires have an identification number for matching purposes only; thus, I can group together your initial package with your final responses. Although Your name will never be placed on any questionnaire, I will, separately, ask you for your name and address so that I may send you the final survey package in mid-November, 1997.

The results of this study are important to people concerned about the effect that change in life circumstances has on physical and psychological health. This may include, future international students, counseling center staff, the medical community, and interested citizens. You may receive a summary of the results by contacting me in March, 1998.

If after reading this letter you wish to participate in this study, please mail in the enclosed sign-up sheet so that I can contact you and have you complete the first survey package.

I would be most happy to answer any questions you might have. My name, phone number, and electronic mail address appear on this letter. Please note that this is my own personal research project. It is not associated with an interest of MSU. Thank you in advance for your assistance.

Sincerely,

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Doctoral Program in Counseling Psychology
Michigan State University
347-4910
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Robbie Steward Ph.D.
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355-8503
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P.S. As an added incentive for completing this survey, your identification number will be entered into a drawing for one of three cash prizes of $150, $100, and $75.

APPENDIX B

Informed Consent Form

I, _____, agree to participate in this study and understand the following conditions:

1. I have freely consented to participate in this study and understand that this means that I agree to complete the initial survey package as well as the final survey package.

2. The purpose of the study has been explained to me, and I both understand the explanation and what my participation involves.

3. I understand that the risks involved with this survey study are minimal. It is possible that some of the items in the survey package may elicit an emotional response. I understand that at all times during data collection qualified counselors will be available to me should I need them. The names and credentials of these counselors appear on this form.

4. The benefits of participating in this study to me include the possibility of a financial reward as well as the opportunity to learn more about the health and views of international students. I also agree that the results of this study are important to people concerned about the effect that change in life circumstances has on physical and psychological health. This may include, future international students, counseling center staff, the medical community, and interested citizens. I understand that I can receive a summary of the results by contacting the investigators in March of 1998.

5. I understand that my responses will be kept ABSOLUTELY CONFIDENTIAL. I further understand that any information regarding my name, address, phone number, and electronic mail address along with any other indicator of my participation in this study will be destroyed by December 15, 1997.

6. I understand that the initial survey packet will take approximately 10 to 20 minutes to complete. I also understand that the final survey packet will take approximately 30 to 45 minutes to compete.

7. I understand that I may be randomly selected to receive either a $150 first prize, or a $100 second prize, or a $75 third prize, as an added incentive for participating in and completing this study. If I am one of the three persons randomly selected, this payment will be made to me on or before December 15, 1997.

_____

Your name (printed)

_____

Your signature

_____

Date signed

Counselors

Susan Doyle M.A. (Clinical psychology); L.L.P. Ingham County Community Mental Health Center

Ellen Berger M.S. (Counseling psychology); post-comps doctoral student in Counseling psychology (MSU).

Ali Mirzadeh M.A. (Clinical psychology); L.L.P. post-comps doctoral student in Counseling psychology (MSU).

APPENDIX C

HEALTH STUDY PROJECT

participant sign-up sheet

Name: please print
_____ (family name)
_____ (first name)

e-mail: _____

Address: _____
_____
_____
_____

Phone: _____

APPENDIX D

Demographic Information

1. Sex: please circle Male Female

2. Country of Origin (where are you from?)
_____

3. Date of Birth: Month_____
Day_____
Year_____

4. Native Language (What Language do you speak at home?)
_____

5. How would you describe your Race and/or Ethnicity? Please circle
Asian
Black
Hispanic, Chicano, or Latino
Pacific Islander
White (European or Middle Eastern)
Mixed race
Other, please specify_____

6. What is your marital status?
____married/engaged and spouse with me
____married/engaged but spouse not with me
____single
____living with Boyfriend/Girlfriend
____separated
____divorced
____widowed

7. When did you enter the United States?
Month_____
Day_____
Year_____

8. Is this your first trip to the United States?
circle one Yes No
If no,
when was the last time you visited the United States? _____
How long did you stay? _____
How many times have you traveled to the United States? _____

9. Do you have any relatives living in the United States ?
circle one Yes No
If yes, then please answer the following:

A- Do they live in the Lansing/East Lansing area? Yes No
If not, how far away do they live? circle one
1- Less than 250 miles
2- More than 250 miles

B- How would you characterize your relationship with this (these) relative(s)? circle one
1-Very close
2-close
3-Not close

10. Did you know anyone in the Lansing/East Lansing area before your arrival?
circle one Yes No

11. What was your total TOEFL score?_____

12. What is your current or intended major?
_____

13. Are you a graduate or undergraduate student?
Please write which_____

APPENDIX E

Instructions: For each of the symptoms listed below, please indicate how frequently it occurs and how bothersome (or how bad) it is.

Frequency Scores (how often)
4-occurs daily
3-occurs several times a week
2-occurs about once a week
1-occurs about once a month
0-not a problem

Intensity Scores (how bad)
4-extremely bothersome when occurs
3-severely bothersome when occurs
2-moderately bothersome when occurs
1-slightly bothersome when occurs
0-not a problem

	Frequency	Intensity
(1) Headaches		
(2) Backaches		
(3) Stomach pain		
(4) Asthma		
(5) Insomnia		
(6) High blood pressure		
(7) Fatigue		
(8) Nausea		
(9) Heart palpitation		
(10) Diarrhea or constipation		
(11) Dizziness		
(12) Weakness		
(13) Fainting		
(14) Laryngitis		
(15) Sore throat		
(16) Chest pain		
(17) Tonsillitis		
(18) Infected eye		
(19) Irregular heart beat		
(20) Heartburn		
(21) Bronchitis		
(22) Pneumonia		
(23) Sinus infection		
(24) Migraine		
(25) Common cold		
(26) Ear infections		
(27) Cold sores		
(28) Upset stomach		

APPENDIX F

Instructions: Below is a list of problems people sometimes have. Please read each one carefully, and circle the number that best describes HOW MUCH THAT PROBLEM HAS DISTRESSED OR BOTHERED YOU SINCE YOUR ARRIVAL IN THE U.S. Please do not skip any items.

0	Not at all
1	A little bit
2	Moderately
3	Quite a bit
4	Extremely

1. Headaches. S
2. Nervousness or shakiness inside. A
3. Faintness or dizziness. S
4. Loss of sexual interest or pleasure. D
5. Pains in heart or chest. S
6. Feeling low in energy or slowed down. D
7. Thoughts of ending your life. D
8. Trembling. A
9. Crying easily. D
10. Feelings of being trapped or caught. D
11. Suddenly scared for no reason. A
12. Blaming yourself for things. D
13. Pains in lower back. S
14. Feeling lonely. D
15. Feeling sad. D
16. Worrying too much about things. D
17. Feeling no interest in things. D
18. Feeling fearful. A
19. Heart pounding or racing. A
20. Nausea or upset stomach. S
21. Soreness of your muscles. S
22. Trouble getting your breath. S
23. Hot or cold spells. S
24. Numbness or tingling in parts of your body. S
25. A lump in your throat. S
26. Feeling hopeless about the future. D
27. Feeling weak in parts of your body. S
28. Feeling tense or keyed up. A
29. Heavy feelings in your arms or legs. S
30. Thoughts of death or dying. D
31. Overeating. D
32. Awakening in the early morning. D
33. Sleep that is restless or disturbed. D
34. Feeling everything is an effort. D
35. Spells of terror or panic. A
36. Feeling so restless you couldn't sit still. A

37. Feelings of worthlessness. D38. Feelings of guilt. D
39. The feeling that something bad is going to happen to you. A
40. Thoughts and images of a frightening nature. A
41. Feeling lonely even when you are with people. D
42. Trouble falling asleep. D

APPENDIX G

ISS

Directions: Please indicate how much you feel or how often you act the way described in each of the following statements. Circle one number for each statement. Please indicate "N/A" if the item does not apply to you.

Never True	0
Rarely True	1
Sometimes True	2
Often True	3
Not Applicable	N/A

1. I have contact with my family.
2. My new friends in the U.S.A. are available when I need them.
3. I have contact with my old friends in my home country.
4. Community activities here mean a lot to me.
5. I am satisfied with student organizations on campus.
6. I trust my family.
7. I have contact with my extended family (uncles, aunts, cousins, etc).
8. I trust my new friends in the U.S.A
9. I trust my extended family (uncles, aunts, cousins, etc).
10. I trust the international student center on campus.
11. My family means a lot to me.
12. I trust my church (or any religious place) here.
13. My extended family (uncles, aunts, etc.) is available when I need them.
14. I am satisfied with my old friends in my home country.
15. I am satisfied with my family.
16. I have contact with the international student center on campus.
17. My old friends in my home country are available when I need them.
18. I have contact with student organizations on campus.
19. My family is available when I need it.
20. I participate in community activities here.
21. I am satisfied with my new friends in the U.S.A.
22. I trust my old friends in my home country.
23. I have contact with my church (or any religious place) here.
24. My extended family means a lot to me.
25. I trust the people I meet in community activities.
26. My new friends in the U.S.A. mean a lot to me.
27. My church (or any religious place) here means a lot to me.
28. I am satisfied with the international student center on campus.
29. I am satisfied with my extended family (uncles, aunt, etc.).
30. I am satisfied with my church (or any religious place) here.
31. I have contact with my new friends in the U.S.A.
32. The student organizations on campus are available when I need them.
33. My church (or any religious place) here is available when I need it.

34. People I meet in community activities are available when I need them.
35. Student organizations on campus mean a lot to me.
36. The international canter on campus is available when I need it.
37. My old friends in my home country mean a lot to me.
38. The international student center on campus means a lot to me.
39. I am satisfied with community activities here
40. I trust student organizations on campus.

APPENDIX H

ILS

Directions: Please indicate how often you feel the way described in each of the following statement. Circle one number for each statement.

0	Never
1	Rarely
2	Sometimes
3	Often

1. My English embarrasses me when I talk to people.
2. I don't like the religions in the U.S.A.
3. I worry about my academic performance.
4. I worry about my future career in my home country.
5. I can feel racial discrimination toward me from other students.
6. I'm not doing as good as I want to in school.
7. My English makes it hard for me to read articles, books, etc.
8. It's hard for me to develop opposite-sex relationships here.
9. I don't like the ways people treat each other here.
10. I don't like American food.
11. People treat me badly just because I am a foreigner.
12. I owe money to others.
13. I think that people are very selfish here.
14. I don't like the things people do for their entertainment here.
15. I can feel racial discrimination towards me in stores.
16. I worry about whether I will have my future career in the U.S.A.
17. Americans' way of being too direct is uncomfortable to me.
18. I study very hard in order not to disappoint my family.
19. I can feel racial discrimination toward me from professors.
20. I can't express myself well in English.
21. It would be the biggest shame for me if I fail in school.
22. I worry about my financial situation.
23. I don't like American music.
24. I can feel racial discrimination toward me in restaurants.
25. My financial situation influences my academic study.
26. I worry about my future: will I return to my home country or stay in the U.S.A.?
27. I haven't become used to enjoying the American holidays.
28. I don't want to return to my home country, but I may have to do so.
29. My English makes it hard for me to understand lectures.
30. I want to go back to my home country in the future, but I may not be able to do so.
31. My financial situation makes my life here very hard.
32. My housing situation is not comfortable
32. My housing situation is not comfortable

APPENDIX I

Personal Views Survey II

This questionnaire concerns attitudes toward oneself and the world that may influence your experience and actions. There are no right or worn answers . What is important is that you record your current opinions accurately.

Please indicate how you feel about each item by circling a number from 0 to 3 in the space provided. A 0 indicates that you feel the statement is not at all true; circling a 3 means that you feel the item is completely true. As you will see, the items are worded very strongly; this is to help you decide the extent to which you agree or disagree.

0 = Not at all true
1 = A little true
2 = Quite a bit true
3 = Completely true

1. I often wake up eager to take up my life where it left off the day before
2. I like a lot of variety in my work
3. Most of the time, people listen carefully to what I have to say
4. Planning ahead can help avoid most future problems
5. What happens to me tomorrow depends on what I do today
6. I feel uncomfortable if I have to make any changes in my everyday schedule
7. No matter how I hard I try, my efforts will accomplish nothing
8. Its hard to imagine anyone getting excited about working
9. The "tried and true" ways are always the best
10. I feel that it's almost impossible to change my family's mind about something
11. Most people who work for a living are just manipulated by their bosses
12. New laws shouldn't be made if they hurt a person's income
13. When you marry and have children you have lost your freedom of choice
14. Trying your best at work really pays off in the end
15. People who never change their minds usually have good judgments
16. Most of what happens in life is just meant to happen
17. It doesn't matter how hard you work at your job, since only the bosses profit by it
18. I don't like conversations when others are confused about what they mean to say
19. Trying hard doesn't pay, since things still don't turn out right
20. Daydreams are more exciting than reality for me
21. I won't answer a question until I'm really sure I understand it
22. When I make plans I'm certain I can make them work
23. I really look forward to my work
24. It doesn't bother me to shift to another task before I have finished the first
25. When performing a difficult task, I know when to seek help
26. It's exciting to learn something about myself
27. Changes in routine are interesting to me
28. It's very hard for me to change a friend's mind about something

29. Thinking of yourself as a free person just leads to frustration
30. It bothers me when my daily routine gets interrupted
31. When I make a mistake, there's very little I can do to make things right again
32. By working hard you can always achieve your goals
33. I respect rules because they guide me
34. It's best to handle most problems by just not thinking about them
35. Most good athletes and leaders are born, not made
36. I enjoy it when things are uncertain or unpredictable
37. People who do their best should get full support from society
38. Most of my life gets spent doing things that are worthwhile
39. Lots of times I don't really know my own mind
40. I have no use for theories that are not closely tied to the facts
41. Ordinary work is just too boring to be worth doing
42. If other people get angry at me, it's usually no fault of mine
43. Changes in routine bother me
44. It's hard to believe people who say their work helps society
45. I can't do much to prevent it if someone wants to hurt me
46. Most days, life is really interesting and exciting to me
47. People who believe in individuality are only kidding themselves
48. It's usually impossible for me to change things in my life
49. I want to be sure someone will take care of me when I get old
50. Politicians run our lives

APPENDIX J

Demographic Information II

1. How would you describe your Race and/or Ethnicity? Circle all that apply
   - Asian
   - Black
   - Hispanic, Chicano, or Latino
   - Pacific Islander
   - European or of European heritage (i.e. Australian, Canadian, New Zealander, South African, etc.)
   - Middle Eastern
   - Mixed race
   - Other, please specify_____

2. Where do you live? circle one
   - 1- live on campus in a residence hall
   - 2- live on campus in the university apartments
   - 3- live in a fraternity or sorority
   - 4- live off-campus in an apartment or house
   - 5- live off-campus with parents or relatives
   - 6- live in a cooperative house

3. My current housing circumstances are
   - 1- very similar
   - 2- similar
   - 3- different
   - 4- very different

   from my housing circumstances in my country.

4. I am
   - Very satisfied
   - Satisfied
   - Neutral
   - Not satisfied
   - Very unsatisfied

   with my housing situation.

5. Since your arrival in the United States have you experienced any unusual events such as death in the family, marriage, divorce, birth of a child, severe protracted illness, severe auto accident, etc.?

BIBLIOGRAPHY

Adler, N., & Matthews, K. (1994). Health psychology: Why do some people get sick and some stay well. Annual Review of Psychology, 45, 229-259.

Akka, R. I. (1967). The Middle Eastern Student on the American College Campus. Journal of the American College Health Association, 15, 251-254.

Allen, F. C. L., & Cole, J. B. (1987). Foreign student syndrome: Fact or fable? Journal of American College Health, 35. 182-186.

Andrasik, , F., Holroyd, K. A., & Abell, T. (1979). Prevalence of headache within a college student population: A preliminary analysis. Headache, 20, 384-387.

Antonovsky, A. Health, stress, and coping. San Francisco: Jossey-Bass, 1979.

Bandura, A. (1977). A social learning theory. Englewood Cliffs, NJ.: Prentice-Hall.

Banks, J. K., & Gannon, L. R., (1988). The influence of hardiness on the relationship between stressors and psychosomatic symptomology. American Journal of Community Psychology, 16 (1), 25-37.

Benishek, L. A. (1993). Hardiness, life stress, and neuroticism: A structural equation model of self-reported illness. Unpublished doctoral dissertation, Michigan State University, East Lansing.

Bernard, L. C., & Belinsky, D. (1993). Hardiness, stress, and maladjustment: Effects on self-reported retrospective health problems and prospective health center visits. Journal of Social Behavior and Personality, 8, 97-110.

Bodnar, J. C., & Kiecolt-Glaser, J. K. (1994). Caregiver depression after bereavement: Chronic stress isn't over when it's over. Psychology and Aging, 9, 372- 380.

Brett, J. M. (1980). The effects of job transfer on employees and their families. In C. L. Cooper & R. Payne (Eds.), Current concerns in occupational stress (pp.175-210). New York: Wiley.

Brislin, R. (1981). Cross-cultural encounters. New York: Pergamon.

Brown, J. D., & McGill, K. L. (1989). The cost of good fortune: When positive life events produce negative health consequences. Journal of Personality and Social Psychology, 57, 1103-1110.

Cannon, W. E. (1942). "Voodoo" death. American Anthropologist, 44, 169- 182.

Cassel, J. (1976). The contribution of the social environment to host resistance. American Journal of Epidemiology. 104, 107-123.

Cernovsky, Z. Z. (1989). Life stress measures and reported frequency of sleep disorders. In T. W. Miller (Ed.), Stressful life events. Madison, CT: International Universities Press.

Chen, G-M., (1993). Self-disclosure and Asian students' abilities to cope with social difficulties in the United States. The Journal of Psychology, 127, 603-610.

Church, A. T. (1982). Sojourner adjustment. Psychological Bulletin. 91, 540-572.

Cohen, J. (1977). Statistical power analysis for the behavioral science. NY: Academic Press.

Cohen, S., & Edwards, G. M. (1989). Personality characteristics as moderators of the relationship between stress and disorder. In R. W. J. Neufeld (Ed.),Advances in the investigation of psychological stress (pp. 235-283). New York: Wiley.

Cohen, S., & Hoberman, H. M. (1983). Positive events and social supports as buffers of life change stress. Journal of Applied Social Psychology, 13, 99-125.

Contrada, R. J. (1989). Type A behavior, personality hardiness, and cardiovascular responses to stress. Journal of Personality and Social Psychology, 57,895-903.

Contrada, R. J., Leventhal, H., & O'Leary, A. (1991). Personality and health. In L. A. Pervin (Ed.), Handbook of personality: Theory and research (pp. 638-669). New York: The Guilford Press.

Dean, A., & Lin, N. (1977). The stress-buffering role of social support? Problems and prospects for systematic investigation. Journal of Nervous and Mental Disease, 165, 403-417.

DeArmond, M. M. (1983). Mental health and international students. National Association of Foreign Student Affairs Newsletter, April/May, 137-150.

Derogatis, L. R., Rickels, K., & Rock, A. (1976). The SCL-90 and the MMPI: A step in the validation of a new self-report scale. British Journal of Psychiatry, 128, 280-289.

Dohrenwend, S. D., & Dohrenwend, B. P. (Eds.). (1974). Stressful life events: Their nature and effects. New York: Wiley.

Domingues, P. M. (1970). Student personeel services for international students. Journal of the National Association of Women Deans, Administrators and Counselors, 33, 83-89.

Ebbin, A. J., & Blankenship, E. S. (1988). Stress-related diagnosis and barriers to health care among foreign students: Results of a survey. Journal of American College Health, 36, 311-312.

Fiske S. T., & Taylor, S. E. (1991). Social Cognition. New York: McGraw- Hill.

Funk, S. C. (1992). Hardiness: A review of theory and research. Health Psychology, 11, 335-345.

Funk, S. C., & Houston, B. K. (1987). A critical analysis of the hardiness scale's validity and utility. Journal of Personality and Social Psychology, 53(3), 572-578.

Furnham, A., & Trezise, L. (1983). The mental health of foreign students. Social Science and Medicine, 17, 365-370.

Ganellen, R. J., & Blaney, P. H. (1984). Hardiness and social support as moderators of the effects of life stress. Journal of Personality and Social Psychology, 47, 156-163.

Gentry, W. D., & Kobasa, S. C. (1984). Social and psychological resources mediating stress-illness relationships in humans. In W. D. Gentry (Ed.), Handbook of behavioral medicine (pp. 87-116). New York: Guilford Press.

Gore, S. (1978). The effect of social support in moderating the health consequences of unemployment. Journal of Health and Social Behavior, 19, 157-165.

Gunn, A. (1988). Health care and foreign students. Journal of American College Health, 36, 345-348.

Hartmann, E. L. (1985). Sleep disorders. In H. I. Kaplan & B. J. Sadock (Eds.), Comprehensive textbook of psychiatry (4th ed.). Baltimore: Williams & Wilkins.

Heller, K., & Monahan, J. (1977). Psychology and community change. Homewood, IL: Dorsey.

Hendricks, G. L., & Skinner, K. A. (1977). Adaptive social patterns of foreign students. Journal of College Student Personnel, 18, 124-127.

Hinkle, L. E., Jr. (1974). The effects of exposure to culture change, social change, and changes in interpersonal relationships on health. In B. S. Dohrenwend & B. P. Dohrenwend (Eds.), Stressful life events: Their nature and effects (pp. 9-44). New York: Wiley.

Holmes, T. H., & Masuda, M. (1974). Life change and illness susceptibility. In B. S. Dohrenwend & B. P. Dohrenwend (Eds.), Stressful life events: Their nature and effects. New York: Wiley.

Holohan, C. J.,& Moos, R. H. (1985). Life stress and health: Personality, coping, and family support in stress resistance. Journal of Personality and Social Psychology, 49, 739-747.

Holroyd, K. A., & Coyne, J. (1987). Personality and health in the 1980's: Psychosomatic medicine revisited. Journal of Personality, 55, 359-375.

House, J. S. (1981). Work stress and social support. Reading, MA: Addison- Wesley.

Hull, J. G., Van Treuren, R. R., & Virnelli, S. (1987). Hardiness and health: A critique and alternative approach. Journal of Personality and Social Psychology, 53(3),518-530.

Hull, W. F. (1978). Foreign students in the United States of America: Coping behavior within the educational environment. New York: Praeger.

Jemmott, J. B., III, & Magloire, K. (1988). Academic stress, social support, and secretory immunoglobulin A. Journal of Personality and Social Psychology, 55,803-810.

Johnson, J. H., & Sarason, I. G. (1979). Moderator variables in life stress research. In I. G. Sarason and C. D. Spielberger (Eds.), Stress and anxiety (Vol 6). Washington, D.C.: Hemisphere Publishing.

Kasl, S. V., & Cobb, S. (1970). Blood pressure changes in men undergoing job loss: A preliminary report. Psychosomatic Medicine, 32, 19-38.

Klineburg, O., & Hull, W. (1979). At a foreign university: An international study of adaptation and coping. New York: Praeger.

Ko, Y.-H. (1979). The mental health of the overseas chinese students in the new environment. Acta Psychologica Taiwanica, 21, 1-7.

Kobasa, S. C. (1979). Personality and resistance to illness. American Journal of Community Psychology, 7, 413-423.

Kobasa, S. C. (1982b). The hardy personality: Toward a social psychology of stress and health. In G. S. Sanders & J. Suls (Eds.), Social psychology of health and illness (pp. 3-32). Hillsdale, NJ: Lawrence Erlbaum Associates.

Kobasa, S.C., & Maddi, S. R. (1977). Existential personality theory. In R. Corsini (Ed.), Current personality theories. Itasca, Ill.: Peacock.

Kobasa, S. C., & Puccetti, M. C. (1983). Personality and social resources in stress resistance. Journal of Personality and Social Psychology, 45, 839-850.

Kobasa, S.C., Maddi, S. R., & Courington, S. (1981). Personality and constitution as mediators in the stress-illness relationship. Journal of Health and Social Behavior, 22, 368-378.

Kobasa, S. C., Maddi, S. R., & Kahn, S. (1982). Hardiness and health: A prospective study. Journal of Personality and Social Psychology, 42, 168-177.

Kobasa, S. C., Maddi, S. R., & Puccetti, M. C. (1982b). Personality and exercise as buffers in the stress-illness relationship. Journal of Behavioral Medicine. 5,391-404.

Krueger, D. W. (1981). Stressful life events and the return to heroin use. Journal of Human Stress, 7(2), 3-8.

Lazarus, R. S. (1966). Psychological stress and the coping process. New York: McGraw-Hill.

Leavy, R. L. (1983). Social support and psychological disorder: A review. Journal of Community Psychology, 11, 3-21.

Lloyd, C., Alexander, A. A., Rice, D. G., & Greenfield, N. S. (1980) Life events as predictors of academic performance. Jorunal of Human Stress, 6(3), 15-26.

Lysgaard, S. (1955). Adjustment in a foreign society: Norwegian Fulbright Scholars visiting the United States. International Social Science Bulletin, 7, 45-51.

Maddi, S. R., & Kobasa, S. C. (1984). The hardy executive: Health under stress. Homewood, Il: Dow Jones-Irwin.

Maddi, S. R., Kobasa, S. C., & Hoover, M. (1979). An alienation test. Journal of Humanistic Psychology, 19, 73-76.

Malatesa, V. J., & Adams, H. E. (1984). The sexual dysfunctions. In H. E. Adams & P. B. Sutker (eds.), Comprehensive handbook of psychopathology. New York: Plenum.

Marion, P.B. (1986). Research on foreign students at college and universities in the United States. In K. R. Pyle (Ed.), Guiding the development of foreign students. San Francisco: Jossey-Bass.

May, R. (1939). The art of counseling. Nashville: Bingdon-Cokesbury. Paperback reprint: Nashville: Apex Books, 1967a.

May, R. (1969c). Love and will. New York: Norton.

Mechanic, D. (1974). Social structure and personal adaptation: Some neglected dimensions. In G. V. Coelho, D. A. Hamburg, and J. E. Adams (Eds.), Coping and adaptation. New York: Basic Books.

Miller, D. F., & Harwell, D. J. (1983). International students at an American University: Health problems and status. The Journal of School Health, 53, 45-49.

Miller, B. C., & Sollie, D. L. (1986). Normal stresses during transition to parenthood. In R. H. Moos (Ed.), Coping with life crises: An integrated approach. New York: Plenum.

Nash, D. (1991). The Course of sojourner adaptation: A new test of the U-curve hypothesis. Human Organization, 50, 283-286.

Oberg, K. (1960). Culture shock: An adjustment in new cultural environments. Practical Anthropology, 7, 177-182.

Pagel, M. D., Smilkstein, G., Regen, H., & Montano, D. (1990). Psychological influences on new-born outcomes: A controlled prospective study. Social Science & Medicine, 30, 597-604.

Parr, G., Bradley, L., Bingi, R. (1992). Concerns and feelings of international students. Journal of College Student Development, 33, 20-25.

Pruitt, F. J. (1978). The adaptation of foreign students on American campuses. Journal of the National Association of Women Deans, Administrators and Counselors, 41, 144-147.

Rabkin, J. G., & Streuning, E. L. (1976a). Life events, stress, and illness. Science, 194, 1013-1020.

Rabkin, J. G., & Streuning, E. L. (1976b). Social change, stress, and illness: A selective literature review. Psychoanalysis and Contemporary Science, 5, 573-624.

Rahe, R. H., & Arthur, R. H. (1978). Life change and illness studies. Journal of Human Stress, 4, 3-15.

Ray, M. M. (1967). Health and disease among international students in the United States. Journal of American College Health Association, 15, 361-364.

Rhodewalt, F., & Zone, J. B. (1989). Appraisal of life change, depression, and illness in hardy and nonhardy women. Journal of Personality and Social Psychology, 56, 81-88.

Rosengren, A., Tibblin, G., & Wilhelmsen, L. (1991). Self-perceived psychological stress and incidence of coronary artery disease in middle-aged men. American Journal of Cardiology, 68, 1171-1175.

Sam, D. L., & Eide, R. (1991). Survey of mental health of foreign students. Scandinavian Journal of Psychology, 32, 22-30

Selye, H. (1956). The stress of life (1st ed.). New York: McGraw-Hill.

Seligman, M. E. P. (1974). In depression and learned helplessness, R. J. Friedman & M. M. Katz (Eds.), The Psychology of depression: Contemporary theory and research. New York: Wiley.

Sklar, L. A., & Anisman, H. (1979). Stress and coping factors influence tumor growth. Science, 205, 513-515.

Stone, A. A., Reed, B. R., & Neale, J. M. (1987). Changes in daily event frequency precede episodes of physical symptoms. Journal of Human Stress, 13, 70-74.

Suls, J., & Rittenhouse, J. D. (1987). Personality and physical health: An introduction . Journal of Personality, 55, 157-167.

Tabachnik, B. G., & Fidell, L. S. (1989). Using multivariate statistics. Philadelphia, Pa: Harper & Row.

Torrey, E. F., Van Rheenan, F. J., & Katchadourian, H. A. (1970). Problems of foreign students: An overview. Journal of American College Health Association, 19, 83-86.

Totman, R., Kiff, J., Reed, S. E., & Craig, J. W. (1980). Predicting experimental colds in volunteers from different measures of recent life stress. Journal of Psychosomatic Research, 24, 155-163.

Ward, L. E. (1962). Some observations of the underlying dynamics of conflict in foreign students. Journal of American College Health Association, 10, 430-440.

Wehrly, B (186). Counseling international students, issues, concerns, and programs. International Journal for the Advancement of Counseling, 9, 11-22

Weiten, W. (1988). Pressure as a form of stress and its relationship to psychological symptomolgy. Journal of Social and Clinical psychology, 6(1), 127-139.

Weiten, W., & Lloyd, M. L. (1994). Psychology applied to modern life. Pacific Grove, Ca: Brooks/Cole.

Wiebe, D.J., Williams, P.G., & Smith, T.W. (1991). Convergent and discriminant validity of the hardiness scales: Another look at the potential neuroticism confound. Unpublished manuscript. University of Utah Department of Psychology, Salt Lake City, Utah.

Williams, N. A., & Deffenbacher, J. L. (1983). Life stress and chronic yeast infection. Journal of Human Stress, 9, 26-31.

Williams, P. G., Wiebe, D. J., & Smith, T. W. (1992). Coping processes as mediators of the relationship between hardiness and health. Journal of Behavioral Medicine, 15, 237-255.

Wyler, A. R., Masuda, M., & Holmes, T. H. (1968). Seriousness of Illness rating scale. Journal of Psychosomatic Research, 11, 363-375.

Yang, B., & Clum, G. A. (1994). Life stress, social support, and problem-solving skills predictive of depressive symptoms, hopelessness, and suicide ideation in an Asian student population: A test of a model. Suicide and Life-Threatening Behavior, 24, 127-139.

Yang, B., & Clum, G. A. (1995). Measures of life stress and social support specific to an Asian student population. Journal of Psychopathology and Behavioral Assessment, 17, 51-67.

Zeiss, A. M. (1980). Aversiveness versus change in the assessment of life stress. Journal of Psychosomatic Research, 24, 15-19.

Zurin, L. M. & Rubin, R. T. (1967). Paranoid psychotic reactions in foreign students from non-Western countries. The Journal of the American Health Association, 15, 220-226.