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A STUDY OF SOMATIC SYMPTOMATOLOGY:
OCCURRENCE AND SEVERITY AS REPORTED BY
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ABSTRACT

A STUDY OF SOMATIC SYMPTOMATOLOGY: OCCURRENCE AND SEVERITY AS REPORTED BY INTERNATIONAL GRADUATE STUDENTS AT MICHIGAN STATE UNIVERSITY

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Researchers often describe the adaptation process of international students negatively as leading to development of physical or emotional problems. A descriptive study of types, frequency, and severity of common physical symptoms reported by international graduate students in association with length of stay in the United States, nationality, and living arrangements was conducted using Roy's Theory of Adaptation as the theoretical framework.

A stratified random sample (N=436) of the 10 most populous graduate international student groups at Michigan State University were surveyed with a response rate of 35 percent (N=153). Study results identified significant differences between frequency and severity of cold and skin symptoms and living arrangements, some nationalities, and new and returning students.

This researcher concluded that the adaptation process had little effect on the development of physical symptoms. Implications for advanced nursing practice focused on wellness interventions. Questions for further research were raised.

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CHAPTER I

Introduction to the Study

Psychological stress may be commonly experienced by those traveling in foreign countries where customs, social structures, and languages are unfamiliar. If enduring or intense psychological stress can lead to premature termination of travel or to residual physical ill-effects such as anxiety, chronic fatigue, headaches, stomach problems and other somatic complaints (Locke & Feinsod, 1985). Early studies (Jammaz, 1973; Klineberg & Hull, 1979; Shepard, 1970) of the international study populations at various sites indicated that 15 percent to 25 percent of the students experienced significant adjustment problems with emotional symptoms such as homesickness or depression. Later studies (Ebbin & Blankenship, 1988; Locke & Feinsod, 1985; Nishio & Bilmes, 1983; Sennhauser, 1983) revealed that physical symptoms in international students are likely to occur. The exact percentage of international students affected in this manner is unknown.

Statement of the Problem

Students studying abroad face extraordinary life changes as a result of their temporary relocation to a new country. The dimensions of cultural and geographic changes added to personal, social, familial and financial stressors may predispose this group to a greater likelihood of illness compared to the domestic student population (Sennhauser, 1985). Not all campuses may recognize that international

students have special needs and that programs must be instituted to help promote their successful adjustment to the new host culture.

This study will attempt to add to the existing knowledge regarding the types, frequency and severity of physical symptoms reported by graduate international students at Michigan State University. The difference in physical symptomatology among nationalities, between type of student, and living arrangements by roommate and spouse will also be examined.

The Family Clinical Nurse Specialist as well as other health care professionals at university health facilities have a need to understand that a person from a different culture or country presenting to them with physical complaints may be experiencing difficulty or problems with coping with the host environment. Blom (1986) stated that culture barriers faced by both students and college health personnel due to differences in language, lifestyles, customs, health care practices and health care delivery systems may interfere with high quality health care for international students. A working knowledge of cultural adjustment patterns and cross-cultural understanding is essential for all professionals who deliver services to international students in order to provide effective health care (Berry, Kessler, & Fodor, 1983).

Significance of the Problem

Student retention is a major issue in the literature among colleges and universities, especially regarding international students. Blom (1986) stated that not only are the international students faced with the typical risks and ailments of life, but they are also confronted with new risks and stresses due to cultural adjustment, lifestyle changes and exposure to new bacteria and viruses not present in their home environment. At the seminar on International Students jointly sponsored by the American College Health Association and the National Association for Foreign Student Affairs held in Washington D.C. in 1985, many campus and federal government representatives indicated that medical problems are the single most important reason for termination of studies by international students. No concrete empirical studies were available to support that claim. However, early termination of studies due to medical problems could represent a severe financial loss to host institutions that may not be necessary.

The subject of health care for international students studying on college and university campuses is of vital importance to health professionals serving in health services because of the large number of foreign students attending American universities. Blom (1986) stated that the percentage of international students can be as high as 15 percent of the student population on many campuses. According to Ebbin & Blankenship (1986), there has been a

marked increase in the number of international students entering the United States. In 1981-82 there were 326,000 international students at colleges and universities in the U.S., a 4.6 percent increase over the past year and a ten-fold increase over the prior 30 years. In fact, during 1981-83, the University of Southern California had approximately 13 percent of its student body comprised of international students (Ebbin & Blankenship 1986). At Michigan State University, currently ranked 17th in the nation by number of international students enrolled, there has been an average of three to five percent increase in the number of international students enrolled each year since 1970. There had been a 14 percent increase in international students from 1985 to 1989 and a 61 percent increase from 1980 to 1989 (MSU Office of Students and Scholars, 1989).

Primary interventions for problems and illnesses of international students have been a neglected part of college campuses. Fisher (1985) proposed a comprehensive wellness program for prevention of illness among international university students while Sennhauser (1985) proposed psychological counseling as primary prevention of illness among international university students.

The research questions which evolved were:

1. What are types, frequency and severity of physical symptoms reported by graduate international students at Michigan State University?

2. Does type, frequency or severity of symptoms reported by graduate international students at Michigan State University differ by length of stay in the U.S. as indicated by student type (new or returning student)?
3. Does type, frequency or severity of physical symptoms reported by graduate international students at Michigan State University differ by living arrangements (roommate or spouse)?
4. Does types, frequency and severity of physical symptoms as reported by graduate international students at Michigan State University differ by nationality?

Definition of Terms

International Student. This is a student registered at Michigan State University from a country other than the United States. Only graduate international students were eligible for this study.

Student Type. Student type refers to the length of time the student was at MSU. New or returning students meant whether the international student was newly registered at MSU during Fall, 1990 or was a returning student. Length of stay in the Unites States experienced by subjects of this study varied from three or four months to many years of study.

Physical Symptoms. Physical symptoms are those bodily sensations perceived by students as variations from what they experience as their normal health. Examples of physical symptoms taken form the literature as increased among international students as compared to the indigenous

student population include change of appetite, undue fatigue, muscle or joint aches, stomach problems, sleep disturbances, homesickness, headaches, intestinal disturbances and heart palpitations (Ebbin & Blankenship, 1986).

Severity of Symptoms. Severity of symptoms denotes a subjective feeling by the subject as to the degree to which symptom interfered with normal functioning.

Nationality. Nationality refers to the country of origin of the international student.

Overview of Chapters

This study is presented in six chapters. The background, significance, and statement of the problem, along with the purpose of the study, the research questions, definition of terms and assumptions and limitations of the study are presented in Chapter I. In Chapter II, the conceptual framework and its relationship to nursing theory and nursing practice is discussed. In Chapter III, a review of literature and research pertaining to the problem is presented. Research design, methodology and techniques for analysis of data are described in Chapter IV. The research results are presented, analyzed and discussed in relation to the research questions in Chapter V. In Chapter VI, a summary of research findings, conclusions, and implications for nursing practice is presented.

CHAPTER II

CONCEPTUAL FRAMEWORK

Introduction

In this chapter, the author presents a conceptual framework which integrates principles of Roy's Adaptation theory and current research findings regarding culture shock with the research questions regarding the somatization of symptoms reported by international students in a university setting. An explication of the model for nursing practice as it applies to this investigation is included.

Roy's Adaptation Model

The four main concepts of Roy's adaptation model involve the person as the recipient of nursing care, the environment, health and nursing. Roy's model is holistic in that the human system functions as a whole and adaptive in that the human system has the capacity to adjust effectively to a constantly changing environment and in turn affects the environment. Health is viewed as a state and a process of being and becoming an integrated and whole person. The goal of nursing is to promote adaptation in all four adaptive modes of the person.

The following underlying assumptions describe Roy's concepts of person and the process of adaptation: 1) The person is a bio-psycho-social being in constant interaction with a changing environment; and 2) to cope with a changing world, the person uses both innate and acquired mechanisms which are biologic, psychologic and sociologic in origin.

Roy maintains that health and illness are one inevitable dimension of a person's life. To respond positively to environmental changes, the person must adapt. The person's adaptation is a function of the stimulus he/she is exposed to. Roy conceptualizes the person as having four modes of adaptation: 1) physiologic needs; 2) self-concept; 3) role function; and 4) interdependence relations (Roy, 1980).

The Sojourn Experience and Roy's Adaptation Model

A sojourn may be defined as a relatively short-term visit to a new environment where permanent settlement is not the purpose of the visit. Sojourners may be international students studying abroad and other cross-cultural groups such as Peach Corps volunteers, businessmen and professional scholars (Church, 1982). The international student (person) in a new environment (MSU campus) experiences many focal, contextual and residual stimuli such as new climate, food, environment, change in living arrangements, new language, new culture with new norms, beliefs and values from his/her home culture. The process of adjustment requires adaptation.

According to Klein (1977), adaptation can be defined as a process of attitudinal or behavioral change in response to new stimuli. Roy (1980), in her theory of adaptation, states that the person must adapt to a constantly changing environment.

According to Roy's theory, the stimuli enter the person from the environment affecting the regulator and/or cognator

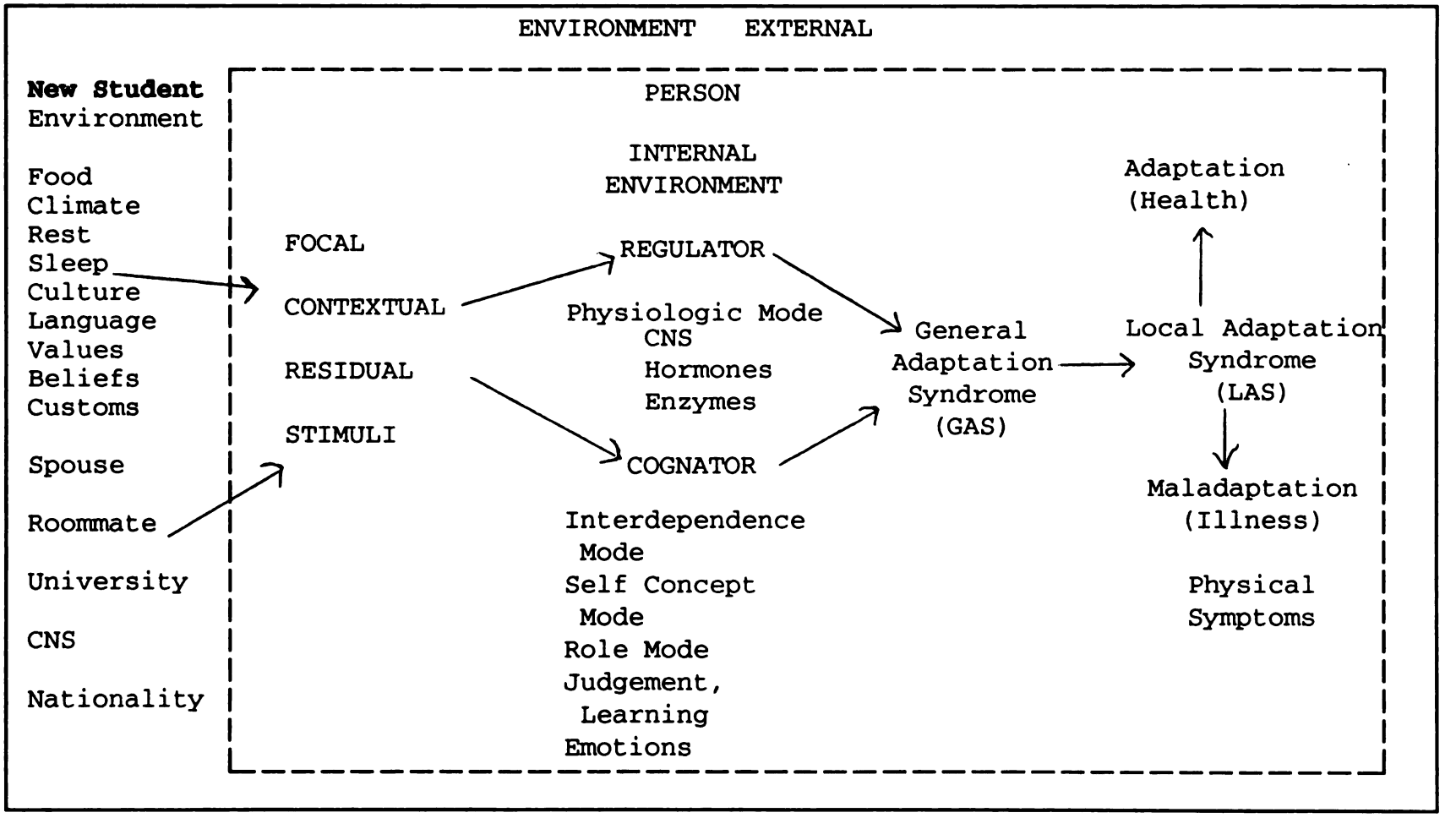
systems. The regulator system houses the General Adaptation Syndrome (GAS) of the physiologic mode generated by the central nervous system and various glandular responses to adaptation. The cognator system regulates emotion, learning and social responses of the role function, interdependent and self-concept modes. The general adaptation syndrome may activate the local adaptation syndrome (LAS). If adaptation is successful, no change in local adaptation sites occurs and the individual stays healthy or symptom-free. If adaptation is unsuccessful, the local adaptation syndrome is activated resulting in illness, or the report of various physical symptoms.

In this study, the stimulus of being a new student versus a returning student carries with it new environmental factors (stimuli) such new language, new foods, new culture with new customs and the Michigan State University campus and housing. Other stimuli such as living arrangements by spouse or roommate or nationality may affect the person's inner environment and affect the adaptation response. The Family Clinical Nurse Specialist (FCNS) can impact at various stages of the GAS, LAS or with system input from the environment prior to onset of the adaptation response (see Figure 1 for explication of this model adapted from Roy's Adaptation Theory, Physiologic Mode).

According to several researchers in the literature, sojourners, hereafter referred to as international students, may be faced with stress due to relocation to an unfamiliar

Figure 1.

Roy Model, Physiologic Mode, Adapted



environment and/or separation from a familiar one and experience some degree of culture shock. Culture shock, or the stress produced by relocation, has been described by researchers (Adler, 1975; Garza-Guerrero, 1974; Oberg, 1960; Klein, 1977) as an inability to perceive and interpret cultural cues and an unfamiliarity with culturally normative behavior. Stress may be experienced if customs, social structures and languages are unfamiliar. Locke and Feinsod (1982) state that stress may be expressed in feelings of anxiety or depression, altered perceptions of self and environment, diminished self-confidence and misinterpretation of the meaning and significance of environmental cues to more frightening episodes of identity confusion and depersonalization.

Roy describes the coping mechanisms the person uses to adapt to the environment as well as personality characteristics, social interactional patterns, affectional needs and physiologic processes. In some situations, normal coping mechanisms of the individual may not be adequate to alleviate the stress of relocation which may result in maladaptation or physical illness for the international student. According to Church (1982), the primary problems faced by international students were language difficulties, financial problems, adjustment to a new educational system, homesickness, adjustment to social customs and norms, racial discrimination and physical complaints. Church (1982) also

contended that students from different cultures differ in the degree to which they experience certain problems.

The Environment

The external environment is a source of input into the adaptive system (Roy, 1980). Three types of stimuli make up the environment: 1) focal stimuli; 2) contextual stimuli; and 3) residual stimuli.

A focal stimuli is a stimulus which immediately confronts the person in a given situation. An example of this is arrival to a new culture, which may herald the onset of the first stage of cultural shock. There is new language to learn, new customs, a new culture, as well as new foods in a totally new environment. An initial state of euphoria, a time of optimism and elation about the new culture is usually experienced upon arrival where the international student usually views the new environment ethnocentrically and is more attuned to cultural similarities. Klein (1977) views the initial stage as a spectator phase where the sojourner is optimistic about his/her ability to adjust, is favorably disposed toward the new culture and interacts as a cultural ambassador.

A contextual stimulus is a background stimulus present in a situation. Included are genetic make-up, sex, developmental stage, self-concept, role functions, interdependence, social interaction patterns, coping mechanisms and styles, physical and emotional stress, cultural orientation, religion and environment. The

contextual stimuli affect the adaptation response when adjusting to a different culture as all are very different from one's home culture. Contextual stimuli differences create the phase differences in adjustment to new cultures. No contextual stimuli are directly included in this study.

The onset of physical symptoms may herald a disintegration phase described by several researchers (Adler, 1975; Church, 1982; Oberg, 1960) as marked by tension, confusion, alienation, depression and withdrawal during which cultural differences become increasingly noticeable and the individual's normal coping mechanisms do not work and which may occur at any time after arrival or during the sojourn experience. Klein (1977) called the second phase a period of stress and adaptation when conflict between home roles and expectations abroad are maximized and there is progressive disappointment and fault-finding of the host culture.

Residual stimuli are those which have an immeasurable effect on a situation such as beliefs, attitudes, experience or traits. Roy's theory is unclear in expressing exactly which is a contextual or residual stimuli since the same factor (values, beliefs, religion) may, at different times, be the different types of stimuli, depending on the situation. No residual stimuli are included for this study.

To summarize, the external environment changes as a result of relocation and the international student must use coping mechanisms to effect adaptive behavior. When the

focal stimulus or relocation occurs, the contextual and residual stimuli including culture, beliefs, values, and roles the international student continues to experience may no longer be appropriate to the new culture. The international student may perceive the need for change but may not have the necessary knowledge (customs), skills (language) or coping mechanisms to affect the necessary changes. Physically, changes in food, rest and sleep patterns, alterations in normal exercise patterns, hobbies and relationships make demands upon the internal physical environment of the international student. Ineffective adaptation may be manifest through illness; i.e., the physical symptoms in the model.

The Person

As an adaptive system, the person has two major internal processor subsystems, the regulator and the cognator (Roy, 1980). The regulator mechanism involves the neural, endocrine and perception-psychomotor portions of the person. The regulator subsystem works mainly through the autonomic nervous system to set up reflect action. The cognator mechanism involves psychosocial pathways and apparatus for perceptual-information processing, learning, judgment and emotion. The person, through the cognator mechanism, acts consciously by means of thought and decision and unconsciously through the defense mechanisms of personality.

Perception links the cognator and regulator subsystems. Activity is manifested through coping behavior in four

adaptive modes: physiologic needs, self-concept, role function and interdependence. The adaptive modes are predicated on the person's needs for physiologic integrity, psychic integrity, and social integrity.

Because of relocation, the cognator system involving learning, judgment and emotion must adapt to the new culture. Anxiety and depression, common experiences of the sojourn experience, may be the result of the maladaptation of the regulator endocrine system and autonomic nervous system to stress resulting in the physical symptoms of illness.

Physiologic Mode

Two basic internal processes of the person as a system are the regulator and cognator subsystems. The regulatory receives input from the external environment and from changes in the person's internal state. It then processes the changes through neural-chemical-endocrine channels to produce responses.

The internal and external stimuli are basically chemical or neural and act as inputs to the central nervous system. The chemical stimuli travel through the circulatory system and be transduced to neural inputs. The spinal cord, brain stem and autonomic reflexes act through effectors to produce automatic, unconscious effects on the body responses. The chemical stimuli in the circulation influence the endocrine glands to produce the appropriate hormone. The responsiveness of target organs or tissues effects body

responses. A psychomotor response follows which activate a body response. These bodily responses are fed back as additional stimuli to the regulator system.

The second adaptive process, not important to this study, but important to total understanding of the function of stress in relation to the adaptation response is the cognator system. The inputs for the cognator are external stimuli. There are four kinds of processes triggered: perception/information processing, learning, judgment, and emotion. Perceptual/information processing is the person's internal activity of selective attention, coding and memory. Learning involves such processes as imitation, reinforcement, and insight. The judgment process includes problem-solving and decision-making. Through the emotional pathways, the person uses defense to seek relief and affective appraisal and attachment.

Physiologic needs are based on physiologic processes: exercise and rest, nutrition, elimination, fluid and electrolytes, oxygen and circulation, regulation of temperature, the functions of the senses and the endocrine system. These are all part of the focal stimuli affecting the adaptation response in this study. Relocation may affect the physiologic mode of the international student in several ways: through fatigue or "jet lag" upon arrival; climate variations, different types, combinations and amounts of food and fluids; varied times for rest and sleep; varied types and amounts of exercise different from one's

home environment. Because of disruption of the internal environment of the sojourner through the physiologic mode, stress in the form of physical illness may occur. Common physical complaints involving the physiologic mode include constipation or diarrhea, abdominal discomfort, extreme fatigue, sense of anxiety, respiratory problems, headache and other common symptoms.

The following is a short discussion of the self-concept mode, role function mode and interdependence mode. These areas of Roy's theory are not important for this study but are important for understanding of the holistic nature of Roy's theory. Maladaptation in any of the four modes may lead to illness.

Self-concept, focusing on the need for psychic integrity, is defined as the composite of beliefs and feelings that one holds about oneself at a given time formed from perceptions of others' reactions and directing one's behavior. It encompasses perceptions of a physical self regarding physical attributes, functioning, wellness-illness state and appearance and the personal self regarding morals, ethics, self-identity and self-esteem. Self concept of the international student may be threatened due to inability to respond to cultural cues and to being unfamiliar with culturally normative behavior.

Role function, emphasizing the need for social integrity, is defined as positions people hold in society and how they play out the interaction based on that

position. Roy describes three types of roles: primary role which determines the majority of behaviors engaged in by the individual during a particular growth period of life based on developmental level; secondary role which influences behavior in a variety of settings and is occupied according to the tasks of individual must accomplish to achieve autonomy at a particular time in life; and tertiary role, a temporary role of choice than an individual occupies for the purpose of fulfilling some minor task associated with the current developmental stage.

The primary role of the international student may be as a national representative sensitive about his or her ethnic background and national status. A secondary role may be as a maturing, developing person concerned about purposes, meaning and goals. A tertiary role may be as a student adjusting to the stress common to all beginning students (Bochner, 1986). Successful role transitions may mark a final independence stage in culture shock described by Adler (1975). This final state is marked by a cherishing of cultural differences. Behavior emerges that is expressive, mutually trusting with increased self and cultural awareness which enables the sojourner to undergo further life transitions characteristic of a successful sojourn experience.

Interdependence Mode

The interdependence mode, defined by Roy as the balance between dependence and independence in relationships with

others, emphasizes the need for social integrity through affectional adequacy or the feeling of security of nurturing relationships. Significant others and support systems contribute to the meeting of interdependence needs. Receptive behavior and contributive behavior apply to the ability to both give and receive love, respect and value in relationships.

Evers (1979) posited that the personality of the international student is viewed as the product of the interactions within the basic socializing structure of family, community and peers. These social interactions provide a base for the individual to fulfill psychological needs. When a move to another environment is made, the international student has to seek, through social interactions, the bases where the needs can now be met. Stress may develop if the differences between environments are large and if inconsistency exists for the habits and norms of the social institutions. Stress is a result when the needs of the international student are no longer met through normal, familiar means.

Nursing and Health

In the Roy model, Nursing acts to enhance the interaction of the person with the environment. The fulfillment of one's purpose in life is reflected in becoming an integrated and whole person. Roy defines the goals of nursing as the promotion of adaptation in each of the four modes thereby contributing to the person's health,

quality of life and dying with dignity (Roy, 1980). In this study, nursing may impact at any point in the model manipulating the environment to enhance wellness in the international student. The FCNS may impact on the new student with various wellness programs or may intervene when the student reports physical symptoms or actually presents to the health care personnel with illness.

Summary

In this chapter, Roy's adaptation theory with its adapted physiologic model was presented as the conceptual framework for this study. The basic concepts of person, environment, health and nursing were discussed in relation to the physiologic mode. Functions of the various modes (physiologic, self-concept, interdependence and role) in relation to the international students' adaptation processes were also discussed.

CHAPTER III

REVIEW OF THE LITERATURE

Introduction

This chapter includes a discussion of major research findings related to the concepts under investigation. Recent studies (Ebbin & Blenkenship, 1986; Allen, 1987) related to the physical symptomatology perceived to be a variation from normal health among domestic and international students enrolled in a course of university study are included as the basis for the development of the questionnaire used by this researcher for this study. Discussion of recent theories regarding culture shock provide the background for a major question regarding length of stay in the United States. Nationality and living arrangements by spouse or roommate as related to physical symptomatology is addressed.

Review of Literature

A review of the literature strongly supports a significant relationship between stressful life events and subsequent ill-health. Beginning a college program is stressful to many students. Significant life changes in financial status, living conditions, eating and sleeping habits, work and social activities can precipitate significant levels of additional stress (Hill, Smith, & Jasmin, 1981). Campus and government representatives at the seminar on International Students jointly sponsored by the American College Health Association and the National

Association for Foreign Students Affairs held in Washington D.C. in 1985 indicated that medical problems were the single most important reason for termination of studies by international students (Blom, 1986). Blom also contended that international students are not only faced with the typical risks and ailments of life, but they must also confront new risks and stresses due to cultural adjustment, lifestyle change and exposure to new bacteria and viruses not present in their home countries.

Theorists from various disciplines have attempted to explain the occurrence of somatic complaints among international students and sojourners as being related to increased stress caused by adjustment to the new culture or culture shock. Oberg (1972), in describing an anthropological view, explained cultural awareness leading to an increase in anxiety levels and inability to cope with the demands of new surroundings. Espousing and psychoanalytic view, Garz-Guerrero (1974) suggested that culture shock consists of mourning the lost culture plus the threat to identity posed by the new culture. Adler (1975), a phenomenologist, viewed culture shock as a "transitional experience." He proposed that, although culture shock is often defined as an illness and associated with negative consequences, it can be a good experience as it promotes cultural learning and personal growth. Dimarco (1974) viewed culture shock as an adaptation to stress. Befus (1988) proposed an integrated definition of culture shock as

"an adjustment reaction syndrome caused by cumulative, multiple and interactive stress in the intellectual, behavioral, emotional and physiologic levels of a person recently relocated to an unfamiliar culture and is characterized by a variety of symptoms of psychological distress" (p. 387). He designed a treatment program which integrates cross-cultural training methods with psychotherapeutic techniques in order to provide sojourners with coping skills for dealing with the multilevel impact of culture shock.

In a study which used physical symptomatology and frequency of clinic visits of physical problems as a manifestation of distress among domestic college students embarking on a course of university study, Hill et al. (1981) developed a modularized stress management program using both a control and experimental group. The significance of the study as related to this investigation was that stress was measured by types and frequency of physical symptoms and number of clinic visits to physicians. During the first three weeks of the program, the experimental group received the modularized stress reduction packet which included individual, self-paced modules aimed at helping students to assess their life stresses, to understand the impact that stress had on their health and developed individualized stress management skills. The control group received no interventions. As early as week four, the experimental group related fewer visits to

physicians, fewer nosebleeds, colds and sore throats; fewer gastrointestinal problems and fewer skin problems. Results at the fifteen week measurement indicated that the students in the experimental group did report feeling less anxiety as measured by a Health Outcome Scale questionnaire. These results supported the hypothesis that knowledge of the association of high stress levels and beginning college would be helpful in reducing the negative effects of that stress. An increased awareness of stress and maintenance of a healthy lifestyle was promoted through use of the modularized units.

Few empirical research articles are available on the topic of use of health care facilities or health care needs of international students at United States universities. Ebbin and Blankenship (1986), in a major article used by this researcher as the basis for construction of the questionnaire used for this study, reviewed student health records from the Student Health Center at the University of Southern California from 1980 to 1983. During that time period, the University of Southern California had approximately 4,000 international students which comprised approximately 13 percent of the student body.

Ebbin and Blankenship (1986) reviewed 96,804 diagnoses from student visits to the University Health Center from 1980 to 1983. The diagnoses coded for international students were compared to those for domestic students. More than 50 disease entities were found to be significantly

increased while 30 were significantly decreased in international students when compared to domestic students. Frequencies of clinic visits were compiled and comparison made between international and domestic students. The international students comprised 21 percent of total number of individuals seen during the specified time period with 18 percent of total number of visits while comprising only 13 percent of the total student population.

One reason for increased health center use by international students in this study were offered by the authors. Many domestic students were not in residence at the University of Southern California and had well-established health care systems in Los Angeles area and did not use university health care centers. However, the international students living on-campus housing had a need for nearby health services which provided easy access and which had special programs to orient them and provide interaction to relieve loneliness, depression and stress (Ebbin & Blankenship, 1986).

Physical symptoms such as cough and inflammation of the trachea were found to be increased among international students while the common cold and ear infections were less commonly seen. The authors theorized that perhaps prior exposure to the organisms that cause these problems may facilitate greater immunity to some diseases. The following were also significantly higher among international students than domestic students: hepatitis, venereal disease,

hemorrhoids, sexual dysfunction concerns, seizure disorder, fever unknown origin, and no pathology. There was a strikingly increased use of the health center by international students for psychiatric problems of anxiety, depression, insomnia, and sexual dysfunction as compared to the domestic student population.

In a study which addressed the frequency of clinic visits as a manifestation of illness, Allen & Cole (1987) contended that differential rates of clinic attendance among foreign and domestic students do not reflect stress-induced morbidity. These authors claimed that factors such as cultural differences in attendance rates, proximity to the health center, lack of other sources of advice, lifestyle, and presentation in the doctor-patient encounter as determinants of the frequency and patterns of consultation. Allen & Cole (1987) offered the possibility that foreign students may enjoy better health as measured by the consultation rates than their counterparts studying in their home country. The significance of the study for the present study was that types and frequency of physical symptoms were measured among international and domestic students. Allen & Cole (1987) compared that frequency of clinic visits among the international students studying in Australia to the frequency of clinic visits of students from the same nationality who stayed home. This study also generated major types of illness or major themes of physical

symptomatology listed in the questionnaire for the present study.

Allen & Cole (1987) also addressed "foreign student syndrome" using two separate hypotheses to test its existence among a student population in Australia. "Foreign student syndrome" had been described as vague physical complaints and a belief by foreign students that complaining of emotional problems as anxiety, loneliness or distress would entail loss of face. As part of the syndrome, the students would then somatize their complaints to permit attendance for medical care for physical problems which they found more acceptable. Three groups of university students were used as comparison groups for the foreign students studying in Australia: one group in Hong Kong, one in Singapore, and a group of native-born Australians. Consulting patterns for Asian students were obtained from the annual reports for the year 1976-77. The mean number of consultations per student per year for Asian students in Asia was four. In Australia, native-born and foreign students differed significantly in the mean frequency of consultations. Foreign students made an average of three visits per student per year in the health service compared with 1.4 visits per student per year among Australian students (Allen & Cole, 1987). The conclusion from the data was that foreign students, despite having the added stress of emigration, consulted less often than their counterparts at home. The main differences in the consulting patterns

between Australian and Asian students concerned respiratory disease, genitourinary diseases, accident poisonings and violence. Of all clinic visits of foreign students, 50 percent were for respiratory ailments as compared to 19 percent in the Australian population. Among Australians, genitourinary dysfunction accounted for 20 percent of visits as compared to 4 percent in the foreign population (Allen & Cole, 1987). Allen and Cole (1987) offered several explanations for the decreased clinic use by Asian students in Australia as compared to Asian students in Asia. Social class differences in reactions to relocation, the likelihood that foreign students would be the most adventurous and adaptable of their cohort and that they may be physically more vigorous than those who stayed at home were plausible explanations of the differences inferred. The authors concluded that the foreign student syndrome did not exist (Allen & Cole, 1987).

In another study which addressed physiologic and psychologic distress among sojourners, Befus (1988) designed a treatment program to provide coping skills for dealing with the multilevel impact of culture shock of Americans studying abroad. Unfortunately, although the treatment program was well-planned, comprehensive in nature, and deemed successful by the author, the study failed to support more than intuitive evidence that a culture shock problem did indeed exist. The significance of the Befus (1988) study to the present study is that there seems to be a

pervading intuitive sense throughout the literature that physiologic and psychologic distress occurs as a result of the adaptation process to a new environment. To address the physiological stress reportedly experienced by the sojourner, a program of deep breathing, progressive relaxation and wellness promotion consisting of planned recreation, good nutrition and exercise was implemented. To address the behavioral aspects of culture shock, the sojourners were guided through application of Social Learning Theory to their daily lives. To deal with the emotional needs of the sojourners, a support group was established and Rational-Emotive therapy was used to alter their emotional tone and reactions. To assist with coping with the intellectual aspects of cultural shock, a facilitator was used to increase cultural awareness.

In another study which again addressed cultural adaptation as a negative stress, Hammer (1987) replicated research through which scholars have identified three behavior skills/abilities important in facilitating intercultural effectiveness: the ability to manage psychological stress, the ability to effectively communicate and the ability to establish interpersonal relationships.

The significance of the study for this research was again the intuitive assumption of the negative impact of culture shock on the international students. The study by Hammer (1987) on adaptation to a different culture was conducted on Americans in a university setting. There are

very few studies on international students adapting to the American culture. This research supports other literature on sojourner adjustment and culture shock in that the ability to deal with psychological stress is critically important to effective functioning in a foreign culture.

Living arrangements may affect the adaptation process. Adelman (1988) stated that when people first encounter a new culture, forming accurate or functional attributions may be difficult since the sojourner often encounters unfamiliar behaviors and demands in the new environment. In the case of culture shock, physical and psychological disorientation can undermine the international student's sense of mastery and self-esteem (Adelman, 1988). Social feedback that reassures persons undergoing cross-cultural adjustment that these are temporary and pervasive reactions to a new situation can help restore cognitive and behavioral control. For international students threatened by the demands of the new culture, compatriot support networks can reaffirm the home values and decrease the possible homesickness and disorientation that may accompany the adjustment process (Bochner, 1981). This compatriot culture may not always be ultimately beneficial and can be detrimental to successful cross-cultural adjustment. Albrecht & Adelman (1984) contended that, although these compatriot groups may alleviate initial stress, reliance on these groups may create a "fortress effect" by insulating the newcomer from cultural change. Adelman (1988) claimed that, for families

that experience severe culture shock, mutual dependency can intensify the stress rather than solidify relational bonds. The contagion effect can inadvertently arise as common experiences that are shared among the compatriot groups. Feelings of homesickness can be easily stirred and the telling of "war stories" can serve as a form of ventilation of stress or can generate tremendous anxiety. Thus marital status and living arrangements can affect the adjustment process. Access to support outside the distressed unit can help to restore equilibrium by facilitating the adjustment process.

In a study conducted among Mexican and Central American Immigrants in the United States, Padilla (1988) found that use of a social support network was effective as a coping response to basic adjustment difficulties. The study is relevant to this researcher in that it identified major areas where cultural adjustment is required by another nationality to the U.S. culture. Thirty-five percent of the respondents stated that adapting to the different food, transportation and life-style constituted the major changes that the Latino family had to make. Twenty-five percent stated that having to learn English altered the family. Forty percent cited additional family concerns regarding children's education, finding good friends and abstinence of drug, alcohol, or tobacco habits (Padilla, 1988). In addition, males were more likely to be subjected to more stressors as they were more likely to be employed, had fewer

coping strategies open to them, experienced role strain caused by loss of social status and had fewer economic resources available to use in family care (Padilla, 1988).

There have been no empirical studies found by this investigator to date that measure the differences in somatization of symptoms between or among different nationality groups or ages. Marital status, living arrangements or family concerns may affect the process of adjustment to a new culture.

Summary

This chapter examined current, relevant literature on concepts of somatic symptomology among international students and its relationship to culture shock, marital status, and living arrangements.

CHAPTER IV

METHODS

Overview

In the following chapter, the research questions and the operational definitions of the variables are presented, along with a description of the sample, the procedure for data collection, instrumentation and scoring, and human rights protection procedures are also discussed.

Procedures

This study describes the relationship between types, frequency and severity of physical symptoms and length of stay in the United States, nationality and living arrangement. A researcher-developed instrument based on symptomatology reported to be higher among international students than among domestic students was employed to measure types and severity of physical symptoms among international students. Sociodemographic data were collected to describe the study sample.

Research Questions

The following questions and derived hypotheses were addressed in this investigation:

1. What are types, frequency, and severity of physical symptoms as reported by graduate international students at Michigan State University?
2. Does type, frequency or severity of symptoms reported by graduate international students at Michigan State

University differ by length of stay in the U.S. as indicated by student type (new or returning student)?

Hypothesis 2.1: Students relocated to the United States less than one year will report higher mean frequency of physical symptoms than those students relocated more than one year.

Hypothesis 2.2: Students relocated to the United States less than one year will report a higher mean severity of physical symptoms than those students relocated more than one year.

3. Does type, frequency or severity of physical symptoms as reported by graduate international students at Michigan State University differ by living arrangements (roommate or spouse)?

Hypothesis 3.1: Married graduate international students at Michigan State University will report lower mean frequency and severity of physical symptoms than non-married graduate international students.

Hypothesis 3.2: Those graduate international students with a roommate will report lower mean frequency and severity of physical symptoms than those with no roommate.

4. Does type, frequency and severity of physical symptoms as reported by graduate international

students at Michigan State University differ by nationality?

Hypothesis: Types, frequency, and severity of physical symptoms will differ by nationality group among graduate international students at Michigan State University.

Sample

Several criteria were established to determine student eligibility for inclusion in the study. These criteria were: 1) the student was a graduate student enrolled in a course of study at Michigan State University; and 2) the student belonged to one of the ten most populous foreign nationalities at Michigan State University.

Of a total graduate international student population of 2,072, 1,109 students belonged to the ten most prevalent nationalities. From this target population of 1,109, a sample of 436 subjects was selected through stratified random sampling technique. The new students to Michigan State University campus, who constitute a relatively small part (21%) of the target population, were oversampled to obtain sufficient numbers for the sample. The number of new students selected for the sample was 154 or 66 percent of the total number of 233 eligible new students. The number of returning students was 282 or 32 percent of

the total eligible returning population of 876. The size of each of the two subsamples was determined on the basis of the requirement that the 95 percent confidence limits be the same for both groups. In other words, inferences about both groups would be subject to the same sampling error.

Instrument

The instrument for this study, the Somatic Symptom Instrument, was developed by this researcher based on symptomatology that, according to the literature, is more prevalent among international students than among domestic students. Many of the items are based on the Longitudinal Health Care Study on International versus Domestic Students by Ebbin & Blankenship (1986). The Somatic symptom instrument was put together by including the most frequent symptoms from their list. Other researchers described similar physical symptomatology in their research. Joint aches and myofascial symptoms are reported by Eskola (1985). Befus (1988) described fatigue, asthma, hives, headaches or ulcers, heart palpitations, and change in appetite. Locke & Feinsod (1982) and Nishio & Bilmes (1985) found constipation or diarrhea, abdominal discomfort, and sense of anxiety in their research. The Somatic Symptom Instrument included symptoms such as fatigue, headache, skin changes, abdominal discomfort, and diarrhea or constipation.

Data Collection

Prior notification by announcement at the club meeting for international students preceded mailing of a questionnaire. The questionnaire and cover letter explaining the study were sent by first-class mail to each student in the sample by name in January, 1991. An identification number was assigned to each student. The subjects were asked to return the questionnaire within three weeks of receipt to the International Center in person or by mail to the researcher in a self-addressed, stamped envelope which was provided with the mailed questionnaire. Due to budget and time constraints, no follow-up phone call or post card was sent if the original questionnaire was not returned within the specified length of time. Subjects were directed to identify whether they had experienced any of the symptoms listed within the prior three months and, if they had experienced symptoms, to indicate their perceived severity of the symptom.

Instrument Reliability and Validity

Since this was a new instrument, no prior reliability data was available. According to Polit & Hungler (1987), the reliability of an instrument is the degree of consistency with which it measures the attributes it is supposed to measure. Internal consistency reliability reflects the extent to which all of the subparts are measuring the same

characteristic. If symptom complexes can be identified, then reliability estimates can be calculated.

Validity refers to the degree to which an instrument measures what it is intended to measure. Like reliability, validity has several different aspects and approaches to assessment. However, a validity of an instrument, according to Polit & Hungler (1987), is extremely difficult to establish. Content validity, or the sampling adequacy of the content area being measured, is necessarily based on judgement (Polit & Hungler, 1987). Content validity is determined by the degree to which items of a scale represent all relevant aspects of the concept. Content validity was accepted based primarily on the work of researchers in cited literature. A panel consisting of clinical nurse specialists, a social scientist and statistician, and family therapist also reviewed the instrument. A factor analysis of the data was done to determine relationships of the various symptoms to each other and examine patterns or clustering of symptoms.

Operational Definitions of Variables

Types of physical symptoms were operationalized by asking subjects to indicate whether they had any of the 25 symptoms listed in the instrument.

Severity of symptoms was operationalized by asking whether symptoms experienced were mild, moderate or

severe based on degree of discomfort the subject perceived from the symptom.

Living arrangement was determined by asking the question, "Who lives with you?" on the demographic portion of the questionnaire. Subjects were to check if they had a roommate, spouse, and the number and ages of children.

Nationality was determined by asking the subject about their country of origin which was verified by the list provided by the Office of International Students and Scholars.

Age of the student was determined by a question that asked the respondent to record his/her age in years.

Sex was determined by answering whether the respondent was male or female.

Type of housing was determined by a question which asked the respondent whether he/she lived in residence halls, off campus or in campus apartments.

Type of visa was determined by a question asking the type of visa the respondent was issued.

Prior disease of the respondent was determined by asking the respondent to check "yes" or "no" in response to several diseases.

Information obtained about the demographic data was summarized in order to described the sample population.

Data Analysis

Sociodemographic characteristics of the sample and scores on the instrument were described using percentages, frequencies, means, and standard deviations. In response to each of the symptoms, a "Yes" scores a 1; "No" scored a 0; If a "Yes" response was obtained for a symptom, a score for symptom severity was obtained: "Mild" scored a 1; "Moderate" scored a 2; "Severe" scored a 3. The dependent variables for the study were types, frequency, and severity of physical symptoms. The independent variables under study were: 1) type of student reflecting length of stay in the United States; 2) nationality; and 3) living arrangements.

Exploratory factor analysis was performed on the symptom instrument to determine if groups of symptoms emerged that tended to occur together. The subscales that did emerge were tested for their reliability employing Cronbach's alpha as the measure of internal consistency. The correlational pattern of the items was analyzed and the clusters of items were compared to conceptually defined clusters. This researcher accepted a coefficient alpha of 0.50 as the level at which a scale would be accepted for further analysis.

The hypotheses were tested using one-way Analysis of Variance. ANOVA is a method of analysis that enables the researcher to determine if the mean

differences between sub-samples are large enough so that it is unlikely that they resulted from sampling error. ANOVA consists of several steps: computation of the between group variance, the value of the within-group variance, the ratio of the between-group variance and the within-group variance (F ratio). The within group variance is also referred to as the error variance of residual variance. The between-groups variance represents the influence on the variable of interest or the outcome variable. If the between-groups variance is not substantially greater than the within-group variance, the researcher would conclude that the difference between the means is probably a reflection of sampling error. If the F ratio were substantially greater than one, the ratio of the between-groups variance and the within-groups variance would not be attributed to sampling error.

The significance of the F ratio is found in an F table which indicates the critical values necessary to test the null hypothesis at selected levels of significance. An alpha level of .05 was set as the significance level for this study. This means that there is a 5 percent chance that the rejection of the null hypothesis that there is no difference between the group means is in error.

Human Rights Protection

A cover letter explaining the research study and goals, the approximate time involved in participation, and assurances of confidentiality was mailed to each participant. Participation in the study was voluntary and the subjects could choose not to answer the questionnaire by not returning it. An identification number was assigned to each questionnaire by this researcher to insure confidentiality. No attempt was made to identify the subject by name. Approval of proposed methods to protect the rights and welfare of human subjects was obtained from the Michigan State University Committee on Research involving Human Subjects (see Appendix B letter).

Assumptions

The researcher made the following assumptions:

1. Each international student was able to understand the English language sufficiently to fill out the questionnaire.
2. Each international student was able to recall and report the physical symptoms experienced during the specified time period.

Limitations

The researcher acknowledges the following limitations of this investigation:

1. Age and sex of student are potential modifying variables that may affect study outcomes. These

and other factors may contribute to the adaptation response and may affect the outcome of this study. No attempt to control for these variables was made in this study. This researcher is concerned only with the independent variables of nationality, student type and living arrangements by roommate or spouse.

2. Although this was a stratified random sample of MSU's graduate international students, the conclusions may not be generalizable to the entire international student population at MSU. The subjects who agreed to participate in the study could be different from subjects who refused.
3. The study results is not generalizable to any other population of international students because it cannot be assumed that international students at MSU are representative of internatinoal students at other American universities.
4. Data were collected at one point in time. Changes may have occurred before the time period specified or will occur after the response time.
5. The researcher-developed questionnaire is an untested instrument of unknown reliability and validity.

Summary

In Chapter IV, the research questions and the operational definitions of the study variables were

presented. Also discussed were the sample criteria, procedures for data collection, instrument development, scoring and data analysis. Reliability and validity of the instrument were also addressed. In the following chapter, the data are presented and the results analyzed in relation to the research questions.

CHAPTER V

RESULTS

Overview

A description of the study sample and the research results are presented in this chapter. Reliability measures for the subscales of the Somatic Symptom Instrument and the mean scores on the subscales are included for groups defined by the independent variables. Results of the one-way ANOVA's for testing hypotheses are also presented.

Sample Characteristics

Of the 436 questionnaires mailed to the sample, 153 questionnaires were returned for a response rate of 35 percent. The number of new students responding to the study was 59 or 38.3 percent of the 153 respondents. These percentages corresponded well to the proportion in the total target population (1109 subjects) of 35.5 percent new students and 64.7 percent returning students.

Taiwan was the most highly represented country with 64 or 41.8 percent of respondents. China followed with 24 or 15.7 percent of respondents. Korea had 18 or 11.8 percent responding. India followed with 12 subjects responding or 7.8 percent. Japan had nine or 5.9 percent, Hong Kong with eight or 5.2 percent, Canada with seven or 4.6 percent and Malaysia with five or 3.3 percent. There were no responses from Turkish subjects. Again, with the exception of Turkey, the respondent sample does reflect the target population well.

The mean age of the respondent sample was 28.8 years with a mode of 25 years. The age group of 24-30 years was most highly represented with 101 of the 153 respondents falling within this group. Twenty-five respondents were between 31 and 39, six were 40 to 48, and nine between 20 and 23 years of age. Twelve questionnaires had no age reported. Of these respondents, 90 individuals (or 60 percent) were male, 50 (or 40 percent) were female, with three questionnaires not indicating sex. This corresponds directly to the target population's sex ratio.

Most (100 or 67 percent) of the respondents lived in campus apartments. Thirty-four (22.2 percent) lived in residence halls and 15 (10.1 percent) lived in off-campus housing. There were 103 (67.3 percent) respondents who were not married, 45 or 29.4 percent who were married and five respondents who did not indicate marital status. Only 25 (16.3 percent) had any children living with them. Ages of the children varied with most of the children under the age of ten.

Very few of the respondents had been diagnosed with previous diseases. One respondent had been diagnosed with TB, one respondent with heart disease, eight respondents with allergies, four respondents with asthma, and two respondents with prior stomach ulcer.

Reliability of the Subscales of the Somatic Symptom Instrument

Exploratory factor analysis resulted in two clusters of symptoms. The clusters of symptoms were also conceptually linked and demonstrated a correlation pattern that indicated that they typically varied together. Two separate scales emerged which were then subjected to a reliability analysis. The first scale labelled "Cold Symptom Scale" consisted of a count of four symptoms: Symptom 1 (Cold); Symptom 3 (Sore Throat); Symptom 4 (Chest pain/cough); and Symptom 21 (Headache) with an average inter-item correlation of .4139. The coefficient Alpha for the Cold Symptom Scale of four symptoms was .7793. The second scale emerged for skin symptoms. This was labelled as "Skin Symptom Scale" and consisted of a count of five items: Symptom 2 (Nosebleeds); Symptom 8 (Dry skin/scalp); Symptom 9 (Hair loss); Symptom 10 (Skin rash); and Symptom 11 (Acne) with an average inter-item correlation of .1809. The coefficient Alpha for the Skin Symptom Scale was .5348 which is low by conventional standards. This researcher decided this level was still acceptable and defensible given the conceptual uni-dimensionality of the scale items.

Several of the other symptoms emerged as heterogenous symptoms forming no systematic pattern. These include Symptom 5 (Cold sore); Symptom 6 (Joint pains); Symptom 7 (Low back pain); Symptom 14 (Hard bowel movements); Symptom 15 (Loose bowel movements); Symptom 16 (Nausea or upset

stomach); Symptom 17 (Unusual fatigue); Symptom 20 (Inability to get to sleep or stay asleep); Symptom 22 (Fever of unknown origin); Symptom 23 (Accidents). Simple frequencies are included in the analysis for this group of symptoms because several occur in frequencies high enough to warrant recognition as potential subject problem areas.

Data Related to Research Questions

Question 1: What are types, frequency, and severity of physical symptoms as reported by graduate international students at Michigan State University?

A listing of the frequencies and percentages of all the symptoms and severity levels of the items in the Somatic Symptom Instrument is presented in Table 1. Calculation are based on the respondent sample of 153 returned questionnaires.

The items on the Cold Symptom Scale had the most numerous average "Yes" responses with 54. Seventy-three or 47.7 percent of the respondents reported colds, 69 or 45.1 percent reported sore throats, 30 or 19.6 percent reported chest pain or cough, and 73 or 47.7 percent reported headache. Because of the different number of items in the Cold Symptom and Skin Symptom Scales, an <u>average</u> of the "yes" responses was computed. Individual symptom scores are also reported.

Table 1

Frequency and Percent of Symptoms and Reported Severity of Symptoms (N=153)

Scale/Symptom	Frequency	Percent of Respondents	Percent Mild	Percent Moderate	Percent Severe
Cold Symptom Scale					
Cold	73	47.7	58.4	29.9	11.7
Sore Throat	69	45.1	67.2	17.2	15.6
Chest Pain/Cough	30	19.6	53.1	40.6	6.3
Headache	73	47.7	65.3	28.0	6.7
Scale Mean	54				
Skin Symptom Scale					
Nosebleeds	44	28.8	83.7	11.6	4.7
Dry Skin/Scalp	74	48.4	62.5	33.3	4.2
Loss of Hair	39	25.5	62.5	30.0	7.5
Skin Rash	28	18.3	61.9	28.6	9.5
Acne	23	15.0	52.0	44.0	4.0
Scale Mean	46				
Other Symptoms					
Discharge R/V	4	2.6	50.0	25.0	25.0
Pain Urination	4	2.6	50.0	25.0	25.0
Cold Sores	14	9.2	64.3	28.6	7.1
Joint Pains	20	13.1	61.1	33.3	5.6
Back Pains	33	21.6	58.1	32.3	9.7
Itchy Eyes	29	19.0	70.4	22.2	7.4
Abdominal Pain	25	16.3	58.3	41.7	0.0
Hard BM	11	7.2	70.0	30.0	0.6
Loose BM	21	13.7	65.0	30.0	5.0
Nausea	42	27.2	64.1	23.1	12.8
Unusual Fatigue	46	30.1	71.1	22.2	6.7
Fever, unknown cause	7	4.6	28.6	57.1	14.3
Accidents	8	5.2	57.1	42.9	0.0

Note. Frequency indicates number of "Yes" responses to the symptoms. Percentage indicates reported severity of symptoms if responded "Yes" to symptom

Items of the Skin Scale had an average of 46 "Yes" responses. Forty-four or 28.8 percent of respondents reported nosebleeds, 74 or 48.4 percent reported dry skin orscalp, 39 or 25.5 percent reported loss of hair, 28 or 18.3 percent with skin rash, and 23 or 15 percent reported worsening of acne.

The discharge symptoms had very few responses with four "Yes" responses. In the "Other Symptom" list, the most notable responses included 46 or 30.1 percent with unusual fatigue, 27.2 percent with nausea, 33 or 21.6 percent with back pain, 29 or 19 percent with itchy eyes followed with 25 or 16.3 percent with abdominal pain (Table 1).

For all symptom severities reported, the greatest number of respondents reported symptoms as mild. The symptoms enumerated in the Cold Symptom Severity scale were noted on average as mild by 53 to 67 percent of the respondents, as moderate by 28-40 percent of respondents, and as severe by less than 15.6 percent of respondents. Items on the Skin Symptom Severity Scale were noted, as mild by more than 61.9 percent of respondents, as moderate by 11.6 to 33.3 percent of respondents, and as severe by less than 9.5 percent. Items in the Other Symptom list were also reported as mild by most of the respondents. Those students reporting discharge symptoms reported 50 percent as mild and 25 percent each of moderate and severe (Table 1).

After testing the Somatic Symptom Instrument for scalability, the hypotheses related to the remaining

research questions were revised to reflect the two scales which emerged, the Cold Symptom Scale and the Skin Symptom Scale. The subsequent presentation of results represents these revisions. All hypotheses were tested using one-way Analysis of Variance and the results are summarized in Table 2.

The overall mean values for both the Cold Symptom Scale and the Skin Symptom Scale were low with an average of fewer than two symptoms for either scale across all groups. The overall symptom severity was reflected the mostly mild nature of symptoms reported.

> Question 2: Does type, frequency, and severity of physical symptoms reported by international students at Michigan State University differ by length of stay in the United States as indicated by student type (new or returning student)?
>
> Hypothesis 2.1: Students relocated to the United States less than one year (new students) will report higher mean frequency of cold symptoms than students relocated more than one year (returning students).

This hypothesis was not supported. There were no significant differences in mean number of cold symptoms between new and returning students.

> Hypothesis 2.2: Students relocated to the United States less than one year (new students) will report higher mean severity of cold symptoms than

Table 2

Means of Cold and Skin Symptom and Severity Scales and ANOVA for the Scales by Type of Student and Living Arrangement

A. ANOVA For Student Type

Skin Symptom Scale	New Student	Returning Student	F-Ratio	df
Number of Symptoms	1.66	1.17	5.35*	1,151
Skin Symptom Severity	0.48	0.30	8.21*	1,151
Cold Symptom Scale				
Number of Symptoms	1.72	1.50	.98	1,151
Cold Symptom Severity	0.69	0.58	.12	1,151

B. ANOVA for Living Arrangement - Spouse

Skin Symptom Scale	Spouse	No Spouse	F-Ratio	df
Number of Symptoms	0.89	1.60	10.42*	1,146
Skin Symptom Severity	0.22	0.44	10.90**	1,146
Cold Symptom Severity				
Number of Symptoms	1.47	1.71	.99	1,146
Cold Symptom Severity	0.63	0.60	.06	1,146

C. ANOVA for Living Arrangement - Roommate

Skin Symptom Scale	Roommate	No Roommate	F-Ratio	df
Number of Symptoms	1.74	1.19	6.54*	1,145
Skin Symptom Severity	0.49	0.32	7.12**	1,145
Cold Symptom Scale				
Number of Symptoms	1.83	1.53	1.74	1,145
Cold Symptom Severity	0.65	0.60	0.20	1,145

* $p \leq 0.05$
** $p \leq 0.01$

students relocated more than one year (returning students).

This hypothesis was not supported. There were no significant differences between new and returning students with respect to mean severity of cold symptoms.

Hypothesis 2.3: Students relocated to the United States less than one year (new students) will report higher mean frequency of skin symptoms than those students relocated more than one year (returning students).

This hypothesis was supported. New students reported 1.66 number of skin symptoms as compared to a mean of 1.17 for returning students.

Hypothesis 2.4: Students relocated to the United States less than one year (new students) will report higher mean severity of skin symptoms than those students relocated more than one year (returning students).

This hypothesis was supported. New students reported a higher mean severity as compared to a milder mean severity for returning students.

Question 3: Does type, frequency, and/or severity of physical symptoms as reported by international students at Michigan State University differ by living arrangements (roommate or spouse)?

This researcher discovered an ambiguity in the demographic data response set with regard to this question.

According to the question as it appeared on the questionnaire, it was very difficult to determine whether absence of roommate and presence of a spouse were mutually exclusive of each other. Therefore, responses for these variables may not be an accurate reporting of these arrangements. All hypotheses related to this question were tested using one way ANOVA's and the results are summarized in Table 2.

Hypothesis 3.1: Married graduate international students at Michigan State University will report lower mean frequency of cold symptoms than non-married students.

This hypothesis was not supported. There was no significant difference between married and non-married students with respect to mean number of cold symptoms.

Hypothesis 3.2: Married graduate international students at Michigan State University will report lower mean severity of cold symptoms than non-married students.

This hypothesis was not supported. There were no differences of mean severity of cold symptoms between married and non-married students.

Hypothesis 3.4: Married graduate international students at Michigan State University will report lower mean severity of skin symptoms than non-married students.

This hypothesis was supported. Married students reported a mean severity of 0.22 which is low as compared to a mean severity of 0.44 for non-married students.

Hypothesis 3.5: Graduate international students with a roommate will report higher mean frequency of cold symptoms than those students without a roommate.

This hypothesis was not supported. There was no significant mean difference in frequency of cold symptoms between those students with or without a roommate.

Hypothesis 3.6: Graduate students with a roommate will report higher mean severity of cold symptoms than those students without a roommate.

This hypothesis was not supported. One-way ANOVA revealed no significant mean difference in severity of cold symptoms between students with or without a roommate.

Hypothesis 3.7: Graduate international students with a roommate will report higher mean frequency of skin symptoms than those students without a roommate.

This hypothesis was supported. There was a significant difference in mean number of skin symptoms between those students with and without a roommate.

Hypothesis 3.8: Graduate international students with a roommate will report higher mean severity of skin symptoms than those students without a roommate.

This hypothesis was supported. Those students with a roommate scored a symptom severity of 0.49 while those students without a roommate scored a mean symptom severity of 0.32.

Question 4: Does type, frequency, or severity of physical symptoms as reported by graduate international students differ by nationality?

Hypothesis 4.1: Frequency of cold symptoms as reported by graduate international students at Michigan State University will differ by nationality.

This hypothesis was supported. The frequency of cold symptoms are significantly different in the sample by country of origin (Table 3). Analysis of the confidence intervals of the means of all countries indicated that China's confidence intervals did not overlap with the confidence interval for Taiwan indicating those two countries differ significantly from each other in mean number of symptoms. Other countries confidence intervals overlapped indicating similarity of response patterns.

Hypothesis 4.2: Severity of cold symptoms as reported by graduate international students at Michigan State University will differ by nationality.

This hypothesis was not supported. There were no mean differences in severity of symptoms by country of origin.

Table 3

ANOVA of Cold Symptom Scale by Country of Origin

Country	Number of Respondents	Mean No. Symptoms	95% Confidence Interval of Mean
Malaysia	5	2.60	.717 - 4.483
Japan	9	2.44	1.284 - 3.604
Indonesia	6	2.00	.850 - 3.149
Taiwan	64	1.80	1.460 - 2.133
Korea	18	1.44	.757 - 2.131
India	12	1.42	.628 - 2.204
Hong Kong	8	1.39	.166 - 2.634
Canada	7	1.29	.126 - 2.445
China	24	0.83	.356 - 1.310

F=2.21; p=.03; df=1,8

This was determined by analysis of the confidence intervals of the means. All the confidence intervals overlappedindicating no significant differences among all the countries in response patterns (Table 4).

Hypothesis 4.3: Mean frequency of skin symptoms as reported by graduate international students at Michigan State University will differ by nationality.

This hypothesis was supported. There was a significant difference in mean number of skin symptoms by country of origin. Analysis of the confidence intervals of the means indicated that Canada significantly differed from Taiwan, Japan, Indonesia, and India. Korea also differed significantly from Taiwan, Indonesia, and India on mean number of symptoms but overlapped with Canada indicating more similarity with that country by response patterns. Countries showing most similarity in response pattern were Taiwan, Indonesia, and India (Table 5).

Hypothesis 4.4: Severity of skin symptoms as reported by graduate international students at Michigan State University will differ by nationality.

This hypothesis was supported. Analysis of the confidence interval indicated that Canadians differed significantly from most other countries except Korea and Turkey on mean severity of skin symptoms. Countries

Table 4

ANOVA of Cold Symptom Severity by Country of Origin

Country	Number of Respondents	Mean Symptom Severity	95% Confidence Interval of Mean
Japan	9	1.00	0.34-1.66
Malaysia	5	1.00	0.20-2.20
India	12	0.68	0.26-1.12
Indonesia	6	0.67	0.27-1.06
Taiwan	64	0.64	0.48-0.79
Korea	18	0.57	0.3 -0.84
Hong Kong	8	0.44	0.06-0.94
Canada	7	0.39	0.02-0.77
China	24	0.35	0.12-0.59

F=1.43; NS; df=1,8

Table 5

ANOVA of Skin Symptom Scale by Country of Origin

Country	Number of Respondents	Mean No. Symptoms	95% Confidence Interval for Mean
Indonesia	6	2.17	0.77-3.56
Hong Kong	8	1.88	1.05-2.70
Japan	9	1.89	0.84-2.94
India	12	1.83	1.18-2.49
Taiwan	64	1.48	1.13-1.84
Malaysia	5	1.20	0.16-2.24
China	24	1.08	0.57-1.60
Korea	18	0.67	0.33-0.01
Canada	7	0.29	-0.17-0.74

F=2.6; p=.01; df=1,8

Table 6

ANOVA of Skin Symptom Severity by Country of Origin

Country	Number of Respondents	Mean Symptom Severity	95% Confidence Interval of Mean
Japan	9	0.62	0.26-0.98
India	12	0.55	0.35-0.75
Indonesia	6	0.53	0.12-0.95
Hong Kong	8	0.40	0.22-0.58
Taiwan	64	0.38	0.28-0.48
Malaysia	5	0.36	0.05-0.77
China	24	0.33	0.17-0.50
Korea	18	0.18	0.07-0.29
Canada	7	0.06	0.03-0.15

F=2.33; p=.02; df=1,8

indicating most similarity of response patterns were Taiwan, Indonesia, and India (Table 6).

Summary

In this chapter, a detailed analysis of the mean frequencies and mean severity scores of the subscales of the Somatic Symptom Instruments were compared across the groups of interest. Types, frequency, and severity of physical symptoms were presented.

New graduate international students to MSU campus have higher numbers and increased severity of skin symptoms but no higher cold symptom frequency or severity.

International students with a roommate or a spouse have a greater number and more severe skin problems than those without a roommate or a spouse. However, presence or absence of spouse or roommate does not seem to have an effect on cold symptoms.

Mean frequency of cold symptoms differed significantly by country of origin with China scoring the lowest mean number of symptoms. However, country of origin did not seem to be related to cold symptom severity.

Mean frequency and severity of skin symptoms differed by country of origin. Canada differed from all other countries with the lowest mean number and severity of symptoms.

Chapter VI

SUMMARY INTERPRETATION AND CONCLUSIONS

Overview

In this chapter, a summary of the study results is presented. This summary and interpretation includes a discussion of the study results as it pertains to the variables of student type, living arrangements, and nationality in conjunction with application of Roy's Adaptation Theory. Findings for the research questions are discussed within the context of previous related research. Limitations of the study are addressed and implications of the study for advanced nursing practice, nursing education, and nursing research are presented.

The significance of the problem of student retention on university campuses with a focus on international students as having significantly more health problems than the domestic student population was addressed. There is a paucity of intercultural nursing research. Much needs to be learned about the actual problems in the adjustment process and the effects which the international students actually experience. Most of the studies attempt to measure or predict this process and its effects on the international students in some way. The purpose of this study was a descriptive analysis of the types, frequency, and severity of common physical symptoms the international students reported within a specific time frame and determining if a

relationship existed with the variables of type of student, nationality, and living arrangements.

Summary and Discussion of Findings

With factor analysis of the Somatic Symptom Instrument, two separate scales emerged: 1) the Cold Symptom Scale consisting of four symptoms (cold, chest pain/cough, sore throat, and headache); and 2) the Skin Symptom Scale consisting of five symptoms (nosebleeds, dry skin/scalp, loss of hair, skin rash, and acne). These scales were the dependent variables in subsequent analysis using one-way ANOVA with the independent variables of student type, living arrangements, and nationality.

The remainder of symptoms consisted of eleven heterogenous symptoms which did not show high inter-item correlation with each other. This list of other symptoms consisting of the symptoms (cold sores, joint pains, itchy eyes, abdominal pain, constipation, diarrhea, nausea, unusual fatigue, fever of unknown etiology, and accidents) were descriptively analyzed. Frequencies, percents, and means of the total numbers of frequencies and severity of symptoms were computed.

This researcher was surprised that most of the symptoms did not form other sub-scales. Conceptually, many of the symptoms may occur together such as the gastrointestinal symptoms. The respondents did not answer in that way. Perhaps the results would have been different if a

homogeneous sample were used or a greater sample response were generated.

Most of the symptom severity for all symptoms were listed as mild, approximately one-third were listed as moderate with less than ten percent listed as severe. It is not known whether the students seek aid for the these symptoms or if these symptoms are represented in increased frequency among the international populations in general.

Several explanations could be offered for the general frequency and severity of symptoms in this list. First, the symptoms were scored as relatively mild. In young, healthy individuals, severe disease is rare. Secondly, in young individuals, one also does not usually see well-developed disease processes as among an older population so symptoms may occur in an isolated manner. Most respondents in this study were 24-28 years of age. Also, the international students must be healthy in order to be able to study in the United States. Most respondents reported no prior existing diseases and may, in fact, be more disease-resistent based on the selection process.

Student Type

There was no statistical mean difference between new students and returning students on the cold symptom scale. This researcher would have expected that new students, because of the adjustment process and new environment, might have experienced and reported an increase in frequency and

severity of symptoms in this category. This was not shown to be true in this study.

For the skin symptom scale, results were statistically significant both in symptom frequency and severity. New students showed both a higher frequency and increased severity of skin symptoms than did the returning students. Climate, environment, as well as different skin product availability in addition to the changes involved in the adaptation process, may account for these results. This finding could support the hypothesis that the adaptation process affects physical health with new students experiencing significantly more skin symptoms with increased severity than the returning students. It remains unknown exactly which factors in the adjustment process can be attributed to this result.

Living Arrangements

Those respondents with no roommate had significantly fewer numbers of skin symptoms and significantly less severity of skin symptoms. Lower stress from not having to share living space as well as fewer routes of infection may account for this finding. However, with analysis of the cold symptom scale, no difference emerged between those two groups regarding frequency or severity of cold symptoms.

Those respondents who indicated living with spouse had significantly few skin symptoms and significantly less severity of skin symptoms. No difference was found between the two groups in the cold symptom scale. Being married

lends credibility to the hypothesis that married students report few physical symptoms in some categories and less severity of symptoms than non-married students. Decreased stress among married students with a greater social support system could be plausible reasons for this finding.

Another possible reason for this finding may be that the question gathering demographic data was somewhat vague. Hence, having no roommate but having a spouse may not be mutually exclusive and lend to the results as noted.

Nationality

For the cold symptom scale, the mean number of symptoms was significantly different by country of origin. Students from China indicated significantly lower mean number of cold symptoms and differed significantly in this manner from the other countries. This researcher has no explanation for these findings.

In the skin symptom scale, Canadians differed significantly from students from Taiwan, Japan, Indonesia, and India with lower mean numbers of symptoms. Students from Korea differed significantly from students from Taiwan, Indonesia, and India with lower mean number of symptoms but overlapped with students from Canada indicating more similarity with that country. With mean severity of skin symptoms, Canadians again differed significantly from most other countries with low mean symptom severity and no overlap of confidence interval of the mean. Countries indicating most similarity of response patterns were Taiwan,

Indonesia, and India. The other groups indicated overlapping confidence intervals and were more similar in their responses. However, the small numbers of respondents from some of these countries may have affected analysis. Wide generalizations cannot be made to the entire student population from those countries based on these findings from a small sample response.

A plausible explanation for the low occurrences of symptoms in this category by Canadians may be that Canadians experience climate, food, and culture similar to the Michigan State University environment and may have developed immunity to the many viruses present in the new environment. The same cannot be said for Koreans. This researcher cannot account for those patterns of symptom clusters, but only asked about isolated symptoms.

Several explanations could be offered for the differences in frequencies and severity of symptoms among the various nationalities. Perhaps the students from those countries indicating higher mean ranges found the adaptation process more difficult due to greater cultural differences. The increased number of cold symptoms among students from different countries may indicate lack of exposure to the various viruses on previous occasions as Michigan cold and flu season were at their height prior to and during data collection. Students may also have felt more pressure from the holiday season for final exams, also occurring during the three month time period previous to data collection.

This researcher cannot generalize that these findings represent a problem with adaptation. In fact, with the relative severity of most symptoms reported listed as mild, adaptation does not seem to be an issue.

Ebbin & Blankenship (1986) found respiratory symptoms such as chest pain and cough to be increased among international students as compared to the domestic student population but they did not do an analysis by nationality. They also found the common cold or sore throat as being of lower incidence in international students. Allen (1986) found that respiratory problems constituted a full 50 percent of clinic visits of Asian students in Asia and 32 percent of the clinic visits for international students in Australia as compared to 19 percent of Australian students in Australia. This researcher also found significant differences among the various groups with regard to frequency of cold symptoms. But, as this researcher did not conduct a research design to contrast the international students from domestic students, general conclusions that these symptoms constitute a problem cannot be generated.

Ebbin & Blankenship (1986) also found higher incidence of dandruff, dry skin, hair loss, and some skin rashes among international students as compared to domestic students. They posited that some of these symptoms may be stress-related. This researcher found significant differences in numbers and severity of similar skin symptoms among the various groups analyzed but, as this research design did not

compare international and domestic students, a generalization cannot be made except that skin symptoms were significantly different among different groups.

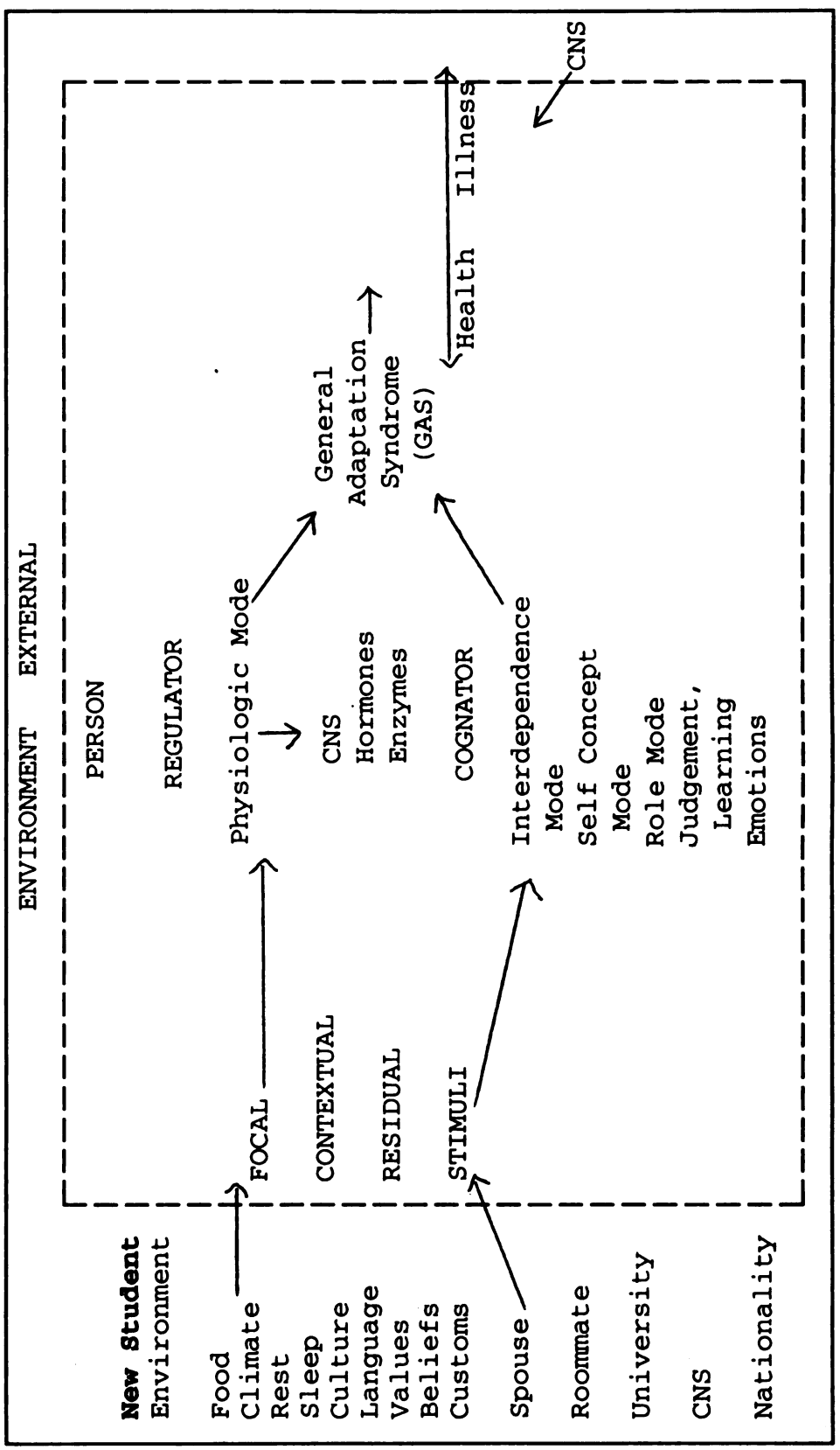
Implications for Changes in Roy's Theory of Adaptation

The mean number of symptoms reported by the respondents was relatively low and most were mild in nature and did not represent full-blown disease entities. Obviously, these students have had to adapt to the university setting and yet the physical manifestations as measured by this study did not reveal maladaptation or illness. This may represent a significant modification in Roy's theory. The interpretation of maladaptation as illness seems to promote the idea that an individual is either healthy or ill. This study seems to promote the idea of a health-illness continuum with mild changes or physical annoyances not equalling "illness" in true physiologic sense. Physical symptoms in themselves can be adaptive to alert the person to problems that may exist. Hence, a less healthy or more healthy outcome may be the outcome of adaptation for certain age groups of the population.

See Figure 2 for change in nursing model from that presented in Chapter II as proposed by this researcher. The fact that the physical symptoms were mostly mild and that students scored relatively few numbers of symptoms may indicate that these graduate international students did not experience a negative adjustment process which adversely affected their health as originally depicted in most of the

Figure 2.

Roy Model, Physiologic Mode, Adapted



literature. Previous researchers, in using a comparative analysis between international and domestic students, differed from this researcher in their approach to the independent variables. This study provides a different view of the international student experience from that usually depicted in the literature by comparing different groups of international students instead of contrasting domestic versus international students. The MSU campus may also be providing very adequately for these students' total needs which reflected in relatively good health for at least 15 percent of the international population who were eligible for the study. Another reason may be that the selection process of these graduate students was fairly rigorous with only those very healthy individuals being selected for overseas study by their respective governments.

Implications for Practice

Universities must provide international students with a program oriented toward their specific needs. Staff well-trained in the cultural differences of international students and health care staff well-grained in transcultural health care methods are only the core elements to a successful international student program. Also necessary are orientation programs which include wellness promotion, stress management strategies, cultural learning, and coping skills development. Activities which respond to student's needs may provide informal means of social support to the students and their families. Formal support staff in the

form of social workers, the Family Clinical Nurse Specialist and other transcultural practitioners would assist the international students and their families through the adaptation process and throughout their entire stay. All these factors are important to the international programs' success at attracting and maintaining its international population.

The Family Clinical Nurse Specialist, in almost any setting, will be caring for individuals from different cultures. If the practice is located on or near a university setting with an international student body, a philosophy of transcultural nursing is essential if the FCNS is to provide quality care and meet the needs of various minority populations. Leininger (1984) posits that the purpose of transcultural nursing is to improve and advance the quality of care to people through the deliberate use of transcultural differences between Koreans and the other countries.

Due to the relative paucity of symptomatology generated through this study, specific interventions are limited to wellness interventions. In the educator role on campus, the FCNS may present a seminar of the study results to the personnel of the International Students and Scholars Office and Michigan State University student health care services. If the international students experience few mild symptoms, it may be unlikely that the FCNS or student health service will see them in clinical practice. The FCNS may facilitate

international health and wellness by presenting information to the students during their orientation programs. The FCNS may suggest ways to assist the international student to manipulate the environment to his/her advantage--that is, better health and wellness. Classes or written information on nutrition, wellness, the advantages of exercise, identification and treatment of common health care problems such as colds, skin care problems may be presented or developed by the FCNS or student health care service personnel. New graduate international students can be assured that, although they may experience physical annoyances such as colds or skin problems, they are usually few in number, transient and mild in nature.

In the clinician role, the FCNS may encounter students from various cultures presenting with physical symptoms of illness common to their age and living arrangements. An intercultural perspective is important especially during the assessment phase of treatment as the FCNS may be able to determine if other issues are contributing to the symptoms of the client. Since most students reported few physical symptoms and mostly mild symptom severity, special attention should be given to those students who present with severe physical complaints.

Many universities are instituting programs to assist their international students to cope with the adjustment process. The FCNS, in the researcher role, may be in a position of leadership in the Student Health Center to set

up these programs where needed or give input into their development. A system could be set up whereby the student health center could identify international students by country of origin and code their symptoms or diagnoses. Comparison could then be made of frequencies of clinic visits and diagnoses of the international students with the domestic student populations. At risk students could then be identified and sought out if presenting problems indicated cause for concern about adjustment problems.

Further Research

This study does not answer many questions as to how the adaptation process affects the international students in general. For the most part, there were low mean numbers of symptoms and mild symptom severity scores. These results indicated that few physical problems actually occurred, at least in the respondents who answered the questionnaires. But, physical symptoms are only a small part of the adjustment process. As most of the students reported the symptoms as mild if they reported symptoms at all, one would wonder if the questionnaire gave the students enough time to develop symptoms. Was the three month time limit enough time to develop symptoms or should it have been a longer time limit such as six months? Perhaps a longitudinal design following the student through the school year at various points would yield more conclusive results. Also, the questions asked in the questionnaire may not have

reflected the most important issues to the international students.

This study raises other questions for further research. Since student retention seems to be an issue in the literature, this researcher would like to know the principal reasons for early return home or incomplete course of study at MSU. Are medical problems a major problem for international student retention? Are exit interviews conducted to determine the problems encountered at MSU? What international students by nationality frequent the health center most often? How do diagnoses and treatment differ among the international student population as compared to the indigenous student population. Is there a transcultural health perspective among the health professionals or is the treatment ethnocentrically western-oriented? Since many international students are married with children, what support staff does MSU have to care for their needs? Perhaps a questionnaire asking them the nature of their needs may reveal areas that are lacking with the present system.

Limitations

A limit for generalization of findings to the international student population is the relatively small number of responses from some countries which may have affected statistical analysis. There is no way to determine if only the students reporting the most symptoms or even the

fewest answered the questionnaire or if the results represented the general international student population.

Another major limitation was the fact that so much information gathered by the questionnaire regarding the other symptoms could not be analyzed as originally anticipated. Also, the researcher did not ask the respondent to identify nursing knowledge focused on different cultures of the world with their own particular health care needs. A knowledge and use of cultural values, beliefs, and practices of different cultural groups can make a difference in client satisfactions, improve health promotion, and help clients recover more quickly from illnesses or disabilities.

Summary

This study was an attempt to identify types, frequency, and severity of physical symptoms among graduate international students at Michigan State University. Variables of student type, living arrangements and nationality were analyzed to determine if a relationship existed between different groups. A research instrument newly formulated was used for this study. As a result of factor analysis, only ten of the twenty-five symptoms listed were able to be analyzed. The other symptoms had either very few responses or were too varied in response pattern for subscales to be produced. Hence, much information was not used in statistical analysis.

However, some interesting results emerged. Contrary to popular belief as written in the literature, the adaptation process did not appear to have much of an effect regarding physical symptoms on this particular group of students. Most of the physical symptoms were listed as mild and relatively few numbers of symptoms were reported. So it would seem that, even though new students exhibited more symptoms and slightly higher severity of symptoms, the symptoms were basically minor annoyances about which it is questionable if the students would seek outside aid to manage.

Living arrangements showed that married students had few numbers and severity of physical symptoms, especially skin symptoms. Those with no roommate showed the similar results.

Nationality does make a difference in frequency and severity of physical symptoms. The students from China showed fewest cold symptoms and differed significantly from the other countries in this manner. The countries were more similar in response pattern in the cold severity scale. Canadians and Koreans differ significantly from the other countries with low mean numbers and severity of skin symptoms.

It is evident that more research is necessary to determine the physical as well as emotional effects the adaptation process has on individuals. Many researchers portray the adaptation process in negative ways. In this

study, adaptation had few effects on types, frequency, and severity of physical symptoms among the graduate international student population at Michigan State University.

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APPENDIX A

Sample Letter

MICHIGAN STATE UNIVERSITY

COLLEGE OF NURSING

EAST LANSING • MICHIGAN • 48824-1317

Dear

This survey is designed to determine how physical symptoms affect international students in general. The study is endorsed by the office of International Students and Scholars and the Organization of Students Health Care personnel at Michigan State University.

I have mailed a questionnaire to you asking about physical symptoms you may have experienced within the past three months. By answering the questions on the form, you will be participating in a study that may help to stay healthy.

You are under no obligation to participate in this study. You indicate your voluntary agreement to participate by completing and returning this questionnaire. A code number has been assigned to your questionnaire. Only this researcher will have access to the number coding system. You will not be identified in any way by name in any report of study results.

The questionnaire will take approximately ten minutes to complete. Please mail completed questionnaire in the enclosed self-addressed envelope no later than three weeks from now. A phone call or another form will be sent as follow-up if this first form is not received. You may also bring this completed form into the International Office for Students and Scholars. The secretary will keep the form for me.

Delores L. Rustic

Delores Rustić, RNFNP
3095 Raymond
Saginaw, MI 48601
1-517-777-7064

APPENDIX B

Human Subjects Letter

MICHIGAN STATE UNIVERSITY

OFFICE OF VICE PRESIDENT FOR RESEARCH
AND DEAN OF THE GRADUATE SCHOOL

EAST LANSING • MICHIGAN • 48824-1046

November 12, 1990

Dolores L. Rustic
3095 Ramond Drive
Saginaw, MI 48601

RE: A STUDY OF SOMATIC SYMPTOMOTOLOGY: OCCURRENCE AND SEVERITY AS REPORTED BY INTERNATIONAL GRADUATE STUDENT POPULATION AT MICHIGAN STATE UNIVERSITY, IRB# 90-454

Dear Ms. Rustic:

The above project is exempt from full UCRIHS review. I have reviewed the proposed research protocol and find that the rights and welfare of human subjects appear to be protected. You have approval to conduct the research.

You are reminded that UCRIHS approval is valid for one calendar year. If you plan to continue this project beyond one year, please make provisions for obtaining appropriate UCRIHS approval one month prior to November 12, 1991.

Any changes in procedures involving human subjects must be reviewed by the UCRIHS prior to initiation of the change. UCRIHS must also be notified promptly of any problems (unexpected side effects, complaints, etc.) involving human subjects during the course of the work.

Thank you for bringing this project to our attention. If we can be of any future help, please do not hesitate to let us know.

Sincerely,

David E. Wright, Ph.D.
Chair, UCRIHS

DEW/ dee

cc: Dr. Rachel Schiffman

APPENDIX C

Somatic Symptom Scale

SOMATIC SYMPTOM SCALE

If you have experienced any of the symptoms listed below within the past three months, place a mark under "Yes" or "No" column. If you have marked "yes" in the symptom column, also place a mark under the column which best describes how severe the symptom is to you.

	Symptom		Severity		
In the past three months I have experienced:	**Yes**	**No**	**Mild**	**Moderate**	**Severe**
1. Cold					
2. Nosebleeds					
3. Sore throat					
4. Chest pain/cough					
5. Cold Sores					
6. Joint pains					
7. Low back pain					
8. Dry flaky skin or scalp					
9. Loss of hair					
10. Skin rash (various kinds)					
11. Acne, worsening of normal skin					
12. Itchy, watery red eyes					
13. Abdominal pain					
14. Hard bowel movements					
15. Loose bowel movements					
16. Nausea (upset stomach)					
17. Unusual fatigue (tiredness)					
18. Unusual discharge from penis or vagina					
19. Painful urination					
20. Inability to get to sleep or stay asleep (insomnia)					
21. Headache					
22. Fever for unknown reasons					
23. Accidents					
24. A. Females answer the following question: Increased pain, cramps with menstrual cycles, lack of menses					
24. B. Males answer the following question: Impotence, sexual dysfunction					
25. Other (specify)_____					
_____					
_____					

Please fill out this form completely and return it by _____ to the Office of International Students and Scholars in the International building of Michigan State University.

Age ____ Sex M ____ F ____ Country of Origin _____

Type of Visa _____ Date of entry to the U.S. ____/____/____

Date of arrival to M.S.U. ____/____/____

Have you lived in another city in the U.S. before coming to East Lansing? Yes ____ No ____

If yes, list all locations by City _____

Where do you currently live?
____ Residents Hall
____ Campus apartments
____ Off-campus housing

Class Level
____ Undergraduate
____Graduate

Who lives with you? Check all that apply:
____ Roommate, no relation
____ Spouse
____ Children
____ If with children, how many?
List ages_____
____ I live alone
____ Other (Comment)_____

Before coming to the United States, were you ever told you had any of the following conditions:

Yes	No	
___	___	TB
___	___	Diabetes
___	___	Heart Disease or Murmur
___	___	Allergies to food, medicine, seasonal
___	___	Seizure disorder
___	___	Asthma
___	___	Stomach Ulcer
___	___	Arthritis
___	___	Kidney problems

ID # _____