ACCULTURATION, SELF-CONCEPT, ANXIETY, IMAGERY

AND STRESS AS RELATED TO DISEASE

IN MEXICAN-AMERICANS

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The problem with which this investigation was concerned was that of determining the relationship between the variables of acculturation, imagery, self-concept, anxiety, stress, and seriousness of disease in Mexican-Americans.

The purposes of this study were 1) to determine the statistical predictive efficiency of stress and its relation to disease, 2) to determine if a combination of anxiety, acculturation, self-concept, imagery, along with stress, would increase the statistical predictive efficiency concerning seriousness of disease, and 3) to provide information that may help to develope a theoretical base concerning the above variables and disease in Mexican-Americans.

A total of 240 subjects, a sample of convenience, was selected from eight intact introductory psychology classes from a community college in the West Texas area. From these subjects, the data from the purely Mexican-American subjects were used for analysis, leaving a sample of 172 Mexican-Americans ranging in age from 17 to 58 years. Forty per cent of the sample (males) had an average age of 27 years. Sixty

per cent of the sample were females and had an average age of 25 years.

The following instruments were administered to subjects: 1) the Social Readjustment Rating Scale, 2) the Tennessee Self Concept Scale, 3) a measure of acculturation, 4) the State-Trait Anxiety Inventory, 5) the Questionnaire on Vividness of Mental Imagery, 6) a subjective evaluation of stress, and 7) the Seriousness of Illness Rating Scale.

The following positive correlations were found to be significant: 1) between imagery and self-concept, 2) between stress and seriousness of illness, 3) between acculturation and state anxiety, and 4) between stress and acculturation. The following negative correlations were found to be significant: 1) between imagery and trait anxiety, and 2) between self-concept and trait anxiety. All variables were then added, one at a time in a stepwise manner to a basic stress model, in order to find the fewest and most efficient predictors of seriousness of illness. The most efficient predictors of disease, in rank order, that reached significance were 1) life stress events, 2) subjective stress, and 3) acculturation level.

The findings of external life stressors, subjective stress, and level of acculturation are discussed as having important therapeutic implications in the counseling of Chicanos who show a high probability for stress and disease.

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CHAPTER I

INTRODUCTION

During the last fifteen years, the United States has witnessed the emergence of a strong "ethnic consciousness," particularly among its four major minorities, Asian-Americans, Blacks, Mexican-Americans, and Native-Americans (Baron, 1979). Efforts made to educate the country to the quality of life of these minorities have touched every sector of society, education, employment, housing, and the mental health field.

The mental health field has also been called upon to address itself to the question of how to meet effectively the psychological needs of minorities (Levine & Padilla, 1980). Rapidly growing research with Hispanics has begun to result in a data base for assessing the pan-cultural, as well as culture specific, elements involved in the mental health of Mexican-Americans (Baron, 1979). Baron (1979) has constructed a model called the "Acculturation/System Access Circumplex" which attempts to synthesize various socio-psychological and political issues in relation to the Hispanic. The therapeutic implications of Baron's model will be discussed later.

Simplistically, Mexican-Americans can be defined as those inhabitants of the United States whose cultural heritage and ancestry have the country of Mexico as their main point of origin. However, such a definition does not capture the complexity of the country of origin itself. Mexico, like the United States, has had a rich and varied history filled with a fragmentation and amalgamation of many culturally distinct subgroups. As with any minority group, a number of names have been applied to inhabitants of the United States who are of Mexican descent. Some names attempt to define the ethnic and geographical origin of the population while others grow out of racist attitudes against the group. Examples of the former include terms like Mexican-American, Latino, Spanish-American, and Hispanic. Examples of the latter include greaser, spic, Chicano, and wet-back.

The term Chicano has varying connotations to the Mexican-American community. Whether the term has a positive or a negative valence attached to it depends to a large extent on the context in which it is used. For the purposes of this paper, the terms Chicano, Mexican-American, Hispanic, or Spanish-American are used interchangeably for that diverse group of Spanish-speaking or Spanish-surnamed people in the United States who reflect varied histories and a wide range of values.

This study concentrated on research with Mexican-Americans in order to examine the relationship between anxiety, acculturation, self-concept, imagery, and stress and how these variables may influence the production of disease processes in Mexican-Americans.

There is evidence that disease processes can be influenced by certain mental states (Weil, 1972; Samuels & Samuels, 1975; Simonton, 1978). Weil (1972) states that illness has both psychic and physical components, that "disease-causing" germs are always present in our bodies. At certain times an imbalance occurs between the body and the microorganisms surrounding it, resulting in illness.

Certain mental states, such as imagery, can influence physiological events, like cancer (Simonton, 1978). Although Simonton's results are very tentative, it appears that his use of positive imagery seems to be related to the remission of cancer cells. Other physiological events which can be influenced by cognitive processes include blood pressure, gastric function, heart rate, and skin conductance (Hamilton, 1979).

In the same light, many illnesses depend not so much upon an apparent pathogen but upon the way we react to it (Selye, 1979). This was clearly expressed in the much quoted sentence by Sir William Osler in the nineteenth century: "It is much more important to know what sort of a

patient has a disease than what sort of a disease a patient has" (cited in Selye, 1979, p. 23).

Although the impact of imagery and individual responses are significant factors in the cognitive evaluation process related to disease, other variables need to be considered, such as the impact of stressful life events (Dohrenwend & Dohrenwend, 1974). All individuals, in the course of living, experience a variety of events or life changes which may be considered potential stressors. Included here are such diverse events as changes in residence, marriage, separation and divorce, new additions to the family, death or illness of family members, loss of job, and changed work responsibilities, among others (Johnson & Sarason, 1979).

Another important variable influencing a person's appraisal of a stressful event is anxiety. Manuck, Hinrichsen, and Ross (1975) found that anxiety and stress are related to improving the ability to predict disease when added to other variables, for example, self-concept (Bedell et al., 1977; Kumar et al., 1976). In these studies, low-stress children displayed significantly higher self-concepts, with significantly fewer eposides of daily illnesses.

Finally, level of acculturation has also been found to contribute to stress. Ruiz and Padilla (1977) have defined

acculturation as the degree of commitment to the cultural variables of the majority culture away from the minority culture. Variables such as language, values, diet, and tradition may create conflict in the Hispanic when their values and culture come in contact with the majority culture. Within the present study, level of acculturation is seen as the degree to which certain values and demographic variables differ semantically in the Mexican-American culture in contrast to the dominant culture (Olmedo, Martinez, & Martinez, 1978).

Stonequist (1937) has stated that the socially "marginal" person, or one who lives in two cultures, can have great difficulty adjusting to the demands of the dominant society. Marginality has been related to drug abuse, alcholism, and psychosomatic concerns in the Hispanic population (Levine & Padilla, 1980).

A review of the literature revealed that extensive research has been done relating stressful events and disease in the Anglo-American population (Hamilton & Warburton, 1979), but only one study with Mexican-Americans was found (Komaroff, Masuda, & Holmes, 1968). This investigation related stress and disease using the Social Readjustment Rating Scale, an objective measure of stress. This type of research has not been adequately studied in minority groups, especially Hispanics. Thus, the present study has investigated the cognitive mediating variables of self-concept,

anxiety, imagery, and acculturation in a manner unlike previous research with Hispanics, that of using multiple linear regression to find out which of the above variables, along with stress, would improve the efficiency of predicting disease in Hispanics. Research of this type in the minority area is needed to provide a better theoretical base for what is already being done in treatment procedures. Also, investigation in this area could help provide information for identifying Hispanic individuals with a high probability for disease.

Statement of the Problem

The problem of this study was to determine the relationship between acculturation, imagery, self-concept, anxiety, stress, and seriousness of disease in Mexican-Americans.

Purposes of the Study

1. To determine if there was a relationship between imagery, stress, acculturation, anxiety, self-concept, and seriousness of disease

2. To determine the statistical predictive efficiency of stress and its relation to disease

3. To determine if a combination of anxiety, acculturation, self-concept, imagery, along with stress, would increase the statistical predictive efficiency concerning seriousness of disease

4. To provide information that may be of help in developing a theoretical base concerning the above variables and disease

5. To provide information that may be beneficial with regard to future research involving imagery, acculturation, self-concept, anxiety, stress, and disease in Mexican-Americans

Definition of Terms

Acculturation is defined by Ruiz and Padilla (1977) as the degree of commitment to the cultural variables of the majority group away from the minority group. These variables may include values, language, tradition, diet, and costume. For the purposes of this study, acculturation was defined in terms of scores on an acculturation scale.

Anxiety may be defined in terms of "the intensity of the subjective feelings of tension, apprehension, nervousness, and worry that are experienced by an individual at a particular moment, and by heightened activity of the autonomic nervous system that accompanies these feelings" (Spielberger, 1976, p. 5). Dual sources of anxiety are present in Spielberger's distinction between state and trait anxiety (Spielberger et al., 1970; Spielberger, 1977). The trait represents the more permanent, less changeable characteristic of anxiety (how the individual generally feels). State anxiety, on the other hand, is a reflection of the

predisposing trait; it is situation specific and is more changeable (how the person feels at the moment). For the purposes of this study, anxiety was defined in terms of scores on the state and trait sections of the State-Trait Anxiety Inventory.

Disease can be defined as "an abnormal impairment, disorder, or derangement of any function of an individual" (English & English, 1966, p. 157). According to Wan and Livierators (1978), the concept of disease is a complex phenomenon consisting of the interaction of physical, mental, and social factors. For the purposes of this study, seriousness of disease was defined in terms of scores on the Seriousness of Illness Rating Scale.

Imagery is defined as a situation where an individual reports seeing or picturing something when there is no actual object present to the senses as in perception (Sheehan, 1979). Many different types of imagery are possible such as the following: eidetic imagery, memory imagery, after-image, imagination imagery, perceptual isolation imagery, hypnogic imagery, hallucinogenic drug imagery, and meditation imagery (Sheehan, 1979). For the purposes of this study, imagery was defined by scores on the Betts Question-naire on Vividness of Mental Imagery.

Self-concept can be defined as "the total set of information, ideas, perceptions, assumptions, and beliefs a person has about self" (Eisenberg, 1979, p. 11). The

self-concept system consists of a set of elements in the form of beliefs or perceptions that are connected directly or indirectly to the other elements within the system (Eisenberg, 1979). For the purposes of this study, self-concept was defined as the Total P score on the Tennessee Self Concept Scale.

Stress is defined as the nonspecific response of the body to any demand (Selye, 1956). Those events that call for an adaptive reaction by an individual are considered stressful. A stressor agent is, by definition, non-specific since it produces stress (Selye, 1979). For the purposes of this study, the amount of stress an individual experiences was defined in terms of scores on the Social Readjustment Rating Scale.

Background

The literature investigating the relationship between stress and disease is extensive (Dohrenwend & Dohrenwend, 1974; Garrity et al., 1978; Hinkle, 1974; Holmes & Holmes, 1970; Holmes & Rahe, 1967; Kobasa, 1979; Luborsky et al., 1973; Masuda & Holmes, 1967). Initial research relating stress and physiological changes was done by Cannon (1929) who studied how the major emotions influenced bodily changes such as increases in adrenalin, blood sugar, and blood clotting.

Unlike Cannon, Meyer (1951) hypothesized that life events such as changes in living habits, working conditions,

admission to school, dates of birth and death of friends and family members, and other environmental events were important etiological factors in disease. Meyer organized systematically these social and psychological events of individual patients into a "life chart." The data he gathered served as the impetus for the development of the Social Readjustment Rating Scale, an objective measure of stress.

The role of stressful life events in the etiology of various diseases has been a field of research for the last 25 years. The field was first given formal recognition at the 1949 Conference on Life Stress and Bodily Disease sponsored by the Association for Research in Nervous and Mental Diseases (Rabkin & Struening, 1976).

The most extensive program of life events research has been conducted by Rahe, Holmes, Gunderson, and their colleagues (Dohrenwend & Dohrenwend, 1974). Their samples have been largely based on American naval shipboard personnel and have been extended on an international basis to other naval samples and to diverse civilian groups.

The classic experiments concerning stress and disease were performed by Selye in 1936. Selye's experiments on various species of experimental animals showed that the organism responds in a stereotyped manner to a variety of widely different agents, such as infections, intoxications, trauma, nervous strain, heat, cold, muscular fatigue, and

X-irradiation (Selye, 1936). This stereotypical response

consists of the following stages: 1) shock phase, 2) coun-

tershock phase, 3) stage of resistance, and 4) stage of

exhaustion. This general organismic response to stress was

an attempt by the animal to adapt. Selye termed this the

"general adaptation syndrome (GAS)." Furthermore, it has

been written of Selye in the following:

> All who have followed the progress of
> Hans Selye's analytic work on the general
> adaption syndrome will give ungrudging
> credit to the man and his concepts. His
> level of analysis does not immediately
> help, however, when considering traditional
> conceptions of emotional tension or strain,
> their relationship to social vulnerability
> ... and the cognitive structures which must
> mediate between them (Hamilton, 1979, p. 70).

In contrast to Selye, Lazarus (1966) approaches stress

from a cognitive standpoint, as does Hamilton (1979).

Lazarus states that Selye's GAS could be understood totally

from a psychological point of view. Similarly, Lief et al.,

(1960) further supports the cognitive appraisal position.

In his study, medical students were interviewed after wit-

nessing their first autopsy. The students' abilities to

detach themselves from the autopsy procedure were related

to the successful ability to cope with the situation.

The present study utilized a measure of stress by

Holmes and Rahe (1967) whose theoretical position states

that illness events result from the stress due to certain

life events. Holmes and Rahe (1967) do not totally discount

the value of cognitive mediating events, but state that cognitions may not significantly result in individual variations in stress.

It has been shown that Holmes and Rahe's Social Readjustment Rating Scale, when taken alone, is not an efficient predictor of illness (deFaire & Theorell, 1976). It would then seem that using measures of cognitive mediating variables such as anxiety, self-concept, imagery, and acculturation would increase the predictive efficiency of the Social Readjustment Rating Scale.

Most investigators working in the field of stress and disease have used the original or modified versions of the Social Readjustment Rating Scale. The checklist items are intended to represent fairly common situations arising from family, personal, occupational, and financial events that require or signify change in ongoing adjustment. Weights are assigned to each item based on ratings by a standardization sample of judges who were asked to rate the life events. "Death of spouse," for example, is weighted at 100 (the highest point on the scale), "marriage" at 50, "change in recreation" at 19, etc. Modified versions of the Social Readjustment Rating Scale have been developed for specific populations such as children and athletes (Dohrenwend & Dohrenwend, 1974).

In looking at the areas of stress and disease, we must look at the concept of the term "disease." "Chronic

disease" refers here very generally to syndromes which are
of long duration and are non-infectious. It is the chronic
diseases rather than the acute, infectious ones that are
usually thought to be particularly influenced by the ex-
perience of stress (Rabkin & Struening, 1976).

During the course of the studies of life events re-
search, inspection of the data suggested a positive
relationship between the seriousness of illness and life
change magnitude for the year prior to the onset of disease
(Holmes & Masuda, 1974). Since there was no satisfactory
scale of the seriousness of individual illnesses, Wyler,
Masuda, and Holmes (1968) set themselves the task of con-
structing one, called the Seriousness of Illness Rating
Scale. By the use of a method similar to that employed in
the development of the Social Readjustment Rating Scale,
500 units were assigned to the "seriousness" of peptic
ulcer. With this as the module item, 125 diseases were
rated by two separate samples of physicians. When phy-
sicians were compared with a sample of laymen, the rank
order correlation coefficients were almost as high (.94 as
compared to .98 in the physicians sample) (Holmes & Masuda,
1974). Also, the fact that comparisons of Spanish, Irish,
and American laymen yielded correlations of .90 or higher
suggested a broad, cross-cultural consensus about the
seriousness of illness, as measured by the Seriousness of
Illness Rating Scale (Holmes & Masuda, 1974).

In summary, stress has been found to be significantly related to disease. Also, the greater the magnitude of life change (or life crisis), the greater the probability that the life change would be associated with disease onset, and the greater the probability that the population at risk would experience disease. There was also a strong positive correlation between magnitude of life change and seriousness of the chronic illness experienced. In order to increase the efficiency of prediction, other cognitive mediating variables such as anxiety, acculturation, and self concept must be investigated as factors between stressful events and disease.

Theoretical Basis for the Study

Kagan and Levi (1974) have developed a theoretical model discussing the relationship between external stimuli or life events and disease. These authors state there are psychosocial stimuli that may lead to the formation of disease processes. These stimuli seem to be psychosocial in origin and eventually affect the individual's autonomic nervous system. The manner in which a person autonomically reacts to these psychosocial stimuli depends upon certain genetic variables along with the impact of the early environment. This process is termed by Kagan and Levi the "psychobiological program." This program mainly considers genetic variables and early environment and does not place

any emphasis on the cognitive mediation process interacting with stress and disease.

Johnson and Sarason (1979) state that a neglected area of life stress research has to do with the relationship between life stress and cognitive variables. These authors state:

> To the extent that coping with life stressors
> may place both physical and psychological de-
> mands on individuals and may be related to
> increased levels of anxiety and arousal as
> well as problems of health and adjustment,
> one might speculate that life stress may
> have a deleterious effect on cognitive per-
> formance (Johnson & Sarason, 1979, p. 229).

Similarly, Lazarus (1980) points out the importance of the cognitive evaluation process in the following:

> The key feature of psychological stress that
> distinguishes it from stress at the social
> and physiological levels is the presumption
> that cognitive activities--evaluative per-
> ceptions, thoughts, and inferences-- are used
> by the person to interpret and guide every
> adaptional interchange with the environment.
> The person is said to appraise each ongoing
> and changing transaction with the environment
> with respect to its significance for that per-
> son's well-being (Lazarus, 1980, p. 91).

In support of Lazarus's position on cognitive mediation, Harris (1980) investigated the impact of the mediating variables of self-concept and anxiety and their relationship to illness prediction. In his study, trait anxiety was found to be a more efficient predictor of seriousness of illness than the Social Readjustment Rating Scale. The contribution of the Social Readjustment Rating Scale, as a

predictor, was not as great as trait anxiety, but life events were significantly involved. Harris (1980) stresses that both internal and external variables should be considered in predicting illness behavior. Since no research along these lines has been attempted with the Mexican-American population, it would appear beneficial to study the impact of variables such as anxiety, acculturation, self-concept, and imagery and how they interact with stress and disease production in Hispanics.

It would also seem advantageous to include cognitive appraisal processes into Kagan and Levi's model in which the individual, depending upon whether a life event is interpreted as a stressor, would create conditions leading to autonomic reactions. If these reactions persist long enough, tissue damage results, and these changes are what Kagan and Levi (1974) call "precursors of disease."

In relation to the above model by Kagan and Levi (1974), the present study utilized the Social Readjustment Rating Scale as a measure of external life change, a subjective stress question, the State-Trait Anxiety Inventory, the Tennessee Self Concept Scale, a scale of acculturation, the Questionnaire on Vividness of Mental Imagery, and the Seriousness of Illness Rating Scale was used as a measure of existing disease processes. Thus, the following hypotheses were proposed.

Hypotheses

For clarity, the following abbreviations are used in the hypotheses:

(QVMI) Questionnaire on Vividness of Mental Imagery

(SS)   Subjective Feeling of Stress Question

(AS)   A Scale of Acculturation

(STAI) State-Trait Anxiety Inventory

(TSCS) Tennessee Self Concept Scale

(SRRS) Social Readjustment Rating Scale

(SIRS) Seriousness of Illness Rating Scale

1. There will be a significant positive correlation between imagery and self-concept as determined by scores on the QVMI and the TSCS.

2. There will be no significant correlation between imagery and trait anxiety as determined by scores on the QVMI and the STAI.

3. There will be a significant positive correlation between stress and seriousness of illness as determined by scores on the SRRS and the SIRS.

4. There will be a significant positive correlation between acculturation and self-concept as determined by scores on the AS and the TSCS.

5. There will be no significant correlation between acculturation and state anxiety as determined by scores on the AS and the STAI.

6. There will be a significant negative correlation between self-concept and trait anxiety as determined by scores on the TSCS and the STAI.

7. There will be a significant positive correlation between stress and acculturation as determined by scores on the SRRS and the AS.

8. There will be no significant correlation between stress and state anxiety as determined by scores on the SRRS and the STAI.

Hypotheses 9-19 investigated the efficiency of the prediction of seriousness of illness scores using the following selected variables. This stress model was based upon a dissertation by Harris (1980).

9. Using the stress model (SRRS) as a predictor of disease (SIRS), a significant increase in R^{2*} will be obtained when imagery (QVMI) is added to the model.

10. Using the stress model (SRRS) as a predictor of disease (SIRS), no significant increase in R^2 will be obtained when state anxiety (STAI) is added to the model.

11. Using the stress model (SRRS) as a predictor of disease (SIRS), a significant increase in R^2 will be obtained when trait anxiety (STAI) is added to the model.

* R^2 is that proportion of the variance of the dependent variable which is accounted for by the predictor variables.

12. Using the stress model (SRRS) as a predictor of disease (SIRS), a significant increase in R^2 will be obtained when self-concept (TSCS) is added to the model.

13. Using the stress model (SRRS) as a predictor of disease (SIRS), a significant increase in R^2 will be obtained when acculturation (AS) is added to the model.

14. Using the stress model (SRRS) as a predictor of disease (SIRS), a significant increase in R^2 will be obtained when subjective stress (SS) is added to the model.

15. Using the stress model (SRRS) as a predictor of disease (SIRS), a significant increase in R^2 will be obtained when a vector discriminating sex is added to the model.

16. Using the stress model (SRRS) as a predictor of disease (SIRS), a significant increase in R^2 will be obtained when a multiplicative combination of self-concept (TSCS) and imagery (QVMI) is added to the model. In other words, there will be a significant interaction between self-concept and imagery.

17. Using the stress model (SRRS) as a predictor of disease (SIRS), a significant increase in R^2 will be obtained when a multiplicative combination of acculturation (AS) and self-concept (TSCS) is added to the model. In other words, there will be a significant interaction between acculturation and self-concept.

18. Using the stress model (SRRS) as a predictor of disease (SIRS), a significant increase in R^2 will be obtained when a multiplicative combination of acculturation (AS) and trait anxiety (STAI) is added to the model. Thus, there will be a significant interaction between acculturation and trait anxiety.

19. The single most efficient and adequate variable in predicting disease (SIRS) will be level of acculturation (AS).

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CHAPTER II

REVIEW OF RELATED LITERATURE

Studies relating psychological and social factors,
and life events to illness appear with great regularity in
the major psychological, psychiatric, psychosomatic, and
sociological journals. Despite the historical recognition
of the predisposing role of social and psychological fac-
tors in the onset of illness, it is only during the last
40 years that researchers have attempted to study these
phenomena systematically (Rabkin & Struening, 1976). In
order to manage this large amount of research, this re-
view of the literature is limited to the variables
investigated by this study, and where applicable, their re-
lationship to the Mexican-American literature. Thus, the
interactions of stress, acculturation, imagery, self-
concept, and anxiety will be examined as they relate to
disease in both Anglo-American and Mexican-American subjects.

Stress and Disease

In 1936 Hans Selye articulated his concept of stress
as the "general adaptation syndrome," a set of nonspecific
physiological reactions to various noxious environmental
agents (Selye, 1956). This formulation was largely respon-
sible for popularizing the concept of stress in the

scientific vocabulary of medicine. Selye's work initiated an era of research and theoretical development conducted with accelerating enthusiasm on an international scale in numerous branches of medicine and later the social sciences (Rabkin & Struening, 1976).

It is becoming recognized that stress can be one of the components of any disease, not just of those designated as "psychosomatic" (Dodge & Martin, 1970). Even susceptibility to infectious diseases is thought to be a function of environmental conditions culminating in physiological stress on the individual, rather than simply of exposure to an external source of infection (Dubos, 1965).

Rabkin and Struening (1976) have recently reviewed the extensive literature on stress and illness. These authors talk about the characteristics of external stressors which have been shown to influence the onset of illness. The magnitude of stressors (how far they depart from a baseline condition), the intensity or the rate of change, the length of exposure, preparedness, and absence of prior experience of the particular stressor have all been found to "heighten the impact of stressful events" (Rabkin & Struening, 1976, p. 1018).

Illness onset is generally associated with many potential factors, including stressful environmental conditions, perception by the individual that such conditions are stressful, the relative ability to cope with

or adapt to these conditions, genetic predisposition to a disease, and the presence of a disease agenet (Rabkin & Struening, 1976).

Interpersonal and internal mediating characteristics also influence the perception of stressors. Rabkin and Struening (1976) summarize these as "biological and psychological threshold sensitivities, intelligence, verbal skills, morale, personality type, psychological defenses, past experience, and a sense of mastery over one's fate" (Rabkin & Struening, 1976, p. 1018).

The support systems available to individuals undergoing stress have been shown to be of great importance (Caplan & Killilia, 1976). Dohrenwend and Dohrenwend (1974) discuss three kinds of social network mechanisms influencing response to stress: 1) social isolation, 2) social marginality or minority membership, and 3) status inconsistency. Living alone or in an isolated setting can in itself lead to greater vulnerability to chronic disease (Weisner, 1981).

Weisner (1981) adds that migrating to a town or city can be another major stressor. He points out that the change can be profound. Weisner continues:

> The most important point to be made about
> life change, urbanization and stress is how
> well and how successfully most people make
> such a change and how little major disrpution
> there is. The great majority of people mov-
> ing to cities or living in them do not become
> seriously ill, and certainly do not become

disabled. There may be a <u>relatively</u> greater
degree of reported stress, observed medical
problems, and the like, but such a finding
must be seen against the general background
of the overall successful adjustment char-
acteristic of the millions of urbanizing
families throughout the world. Exposure to
cities as a potential stressor cannot be a
sufficient condition for accounting for the
onset of illness or increased stress but
rather must be viewed as one among many fac-
tors and must be seen within the comparative
rural-urban context (Weisner, 1981, pp. 792-
793).

Leading researchers in the field of stress (Monat &
Lazarus, 1977; Selye, 1956) have pointed out the difficul-
ty in defining the stress concept. Selye (1956) defines
stress as the nonspecific response of the body to any de-
mand. Those events that call for an adaptive reaction by
an individual are considered stressful. In Selye's re-
search using animals, he found a general organism response
to stress which was an attempt by the animal to adapt.
Continued stress seemed to cause physiological reactions
leading to breakdowns in organ systems.

Holtzman and Bitterman (1976) have discussed in a re-
view of the literature that the terms stress and threat
were used interchangeably, thus confusing the terms' mean-
ings. Spielberger (1972) states that stress refers to the
objective or external properties of a situation. Threat
denotes an individual's interpretation or perception of a
situation as dangerous or personally threatening to the
person. Selye (1956) defines stress in terms of internal

physiological responses. Thus, definitions may overlap and add confusion to the constructs.

Because of the vagueness of the concept of stress, replication procedures can be extremely difficult. Holmes and Rahe (1967) have developed the Social Readjustment Rating Scale as an operational definition of stress which can be used to replicate research. This instrument assigns a numerical value to stressful events (e.g., "death of spouse," "retirement from work," "son or daughter leaving home," "trouble with the boss,"). A score for a particular subject or group gives a score of "life stress."

The initial data for the Social Readjustment Rating Scale was gathered from over 5,000 patients who were interviewed using a "life chart" developed by Meyer (1951), who organized systematically the social and psychological phenomena of individual patients. Meyer found that certain life events tended to cluster prior to the onset of illness. These life events make up the items of the Social Readjustment Rating Scale.

In general, the purpose of life events research is to demonstrate a temporal association between the onset of illness and a recent increase in the number of events that require socially adaptive responses on the part of the individual. The impact of such events is presumed to be additive; more events are expected to have greater effect (Dohrenwend & Dohrenwend, 1974). The underlying assumption

is that such events serve as precipitating factors, influencing the timing but not the type of illness episodes.

Holmes and Rahe (1967) asked over 2,000 navy personnel to report their life changes and histories of illness during the previous ten years. Number of illness episodes were related to scores on the Social Readjustment Rating Scale. These scores are referred to as life change units or LCU's. In general, those who recorded fewer than 150 LCU's for a given year reported good health for the following year. Those with annual LCU's between 150 and 300, about half reported illness in the next year. When annual LCU scores exceeded 300, as they did for a small proportion of the respondents, illness followed in 70 per cent of the cases, and furthermore tended to entail multiple episodes (Holmes & Rahe, 1967).

Modest but statistically significant relationships have been found between mounting life change and the occurrence or onset of sudden cardiac death, myocardial infarctions, accidents, athletic injuries, tuberculosis, leukemia, multiple sclerosis, diabetes, and the entire gamut of minor medical complaints (Bramwell et al., 1975; Rahe & Lind, 1971; Rahe, Mahan, & Arthur, 1970; Selzer & Vinokur, 1974; Theorell & Rahe, 1968).

High scores on checklists of life events have also been repeatedly associated with psychiatric symptoms and disorders, and such scores have been found to differ

between psychiatric and other samples (Dekker & Webb, 1974; Dohrenwend & Dohrenwend, 1974; Paykel, 1974; Prusoff & Myers, 1975; Uhlenhuth & Paykel, 1973).

In the development of the Social Readjustment Rating Scale, high correlations between minority groups were found (Holmes & Rahe, 1967). Holmes and Rahe (1967) suggest the desirability of extending the investigation further into the cross-cultural area. Seppa (cited in Dohrenwend & Dohrenwend, 1974) compared a sample from El Salvador, a Spanish-speaking Central American country, with a Spanish sample in a study by Celdran (cited in Dohrenwend & Dohrenwend, 1974) and found the correlations high.

Komaroff, Masuda, and Holmes (1968) utilized the Social Readjustment Rating Scale to compare scores of Negro, Mexican-American and Anglo subjects. The Mexican-American responses were lower and the Negro responses were ranked higher than those of the Anglos to the items "death of a close family member" and "major personal injury or illness." The Mexican-American responses were lower than either the Negro or Anglo responses to the item "death of spouse." In general, the responses of the three cultural groups differed significantly, suggesting that the cultural samples may assess differently what is considered "more" or "less" stressful. The following studies also demonstrate further how different cultural groups may perceive stress differently.

Mexican-Americans perceived items related to econo-
mics as greater stressors than Anglos and Blacks did on
responses to the Social Readjustment Rating Scale (Levine
& Padilla, 1980). In a different study by Lehmann (1970),
it is also interesting that economic distress was higher
among Hispanics than among Blacks of similar economic
standing. In New York City, male and female Anglos, Puerto
Rican, and Black psychiatric inpatients responded to a
scale concerning needs they felt were unfulfilled. Eco-
nomic stress was most common among the young patients of
all ethnicities and recent Puerto Rican immigrants
(Fitzgibbons, Cutler, & Cohen, 1971). Berry (1976) and
Chance (1965) have similarly emphasized that the same en-
vironmental conditions may be perceived differently by
different subcultural groups. Thus, the ethnographic li-
terature focuses on group and cultural differences in
perceptions of change and stress, while Rabkin and Struening
(1976) and Dohrenwend and Dohrenwend (1974) document indi-
vidual differences in responsiveness.

Aside from the study by Komaroff, Masuda, and Holmes
(1968) on stress and Mexican-Americans, a search of the
literature revealed no investigations comparing stress and
disease in Hispanics.

In summary, the literature supports the idea that life
change or stress is a modest but a significantly related
variable to disease. It has been suggested that stress

research be extended into the cross-cultural area. The
present study has been aimed at filling this gap in the
research.

Acculturation, Stress, and Disease

Another contributing factor to stress among Hispanics
is concern about acculturation and/or dual cultural mem-
bership. Social theorists have recognized that psychological
stress is associated with coexistence in two cultures
(Wallace, 1970). Stonequist (1937) identified the "mar-
ginal" person as one whose bicultural membership retards
integration of ethnic and personal identity. Often, mar-
ginality is associated with poor communication skills,
poverty, and seasonal migration for work, making poor ad-
justment even more difficult (Ruiz & Padilla, 1977).

"Social marginality" is a complex variable, and in
cross-cultural studies is particularly difficult to meas-
ure. One piece of evidence for the importance of marginality
is an ecologic correlation between the sheer numerical size
of a given group or "ethnic density" and hospitalization
rates for psychiatric disorder (Weisner, 1981). Likewise,
if a given ethnic group constitutes a smaller proportion
of the total population in a particular area, diagnosed
rates of mental illness increase in comparison both to the
rates of the same ethnic group in neighborhoods where its
members constitute a significant proportion or majority.

Ruiz and Padilla (1977) define acculturation as the degree of commitment to the cultural variables of the majority group away from the minority group. Such variables include language, values, tradition, diet, and costume. As Ruiz and Padilla state:

> A Latino client who is monolingual Spanish or bilingual Spanish/English, with Spanish dominant, Roman-Catholic, a member of an extended family and who prefers ethnic food and dress is probably much less acculturated to the majority, Anglo culture of the United States than some other Latino client who is monolingual English, non-Catholic, from or in a nuclear family, and without preferences for the diet or clothing characteristic of his ethnic group (Ruiz & Padilla, 1977, pp. 403-404).

It is posited that, as acculturation increases among Hispanics, they will experience increasing personal stress associated with the imposed cultural differences (Ruiz, Padilla, & Alvarez, 1973). As will be discussed shortly, there is also evidence to the contrary, that as acculturation increases, individuals experience less stress and better mental health (Murphy, 1965).

The following study conducted with Mexican-American subjects shows personal stress associated with acculturation. When subjects responded to an attitude scale of Mexican-American values and to the Social Readjustment Rating Scale, those expressing "rebel" attitudes (rejecting their heritage) experienced more psychosomatic symptomatology, personal guilt, and self-derogation than those expressing

traditional values. The "rebels" believed that they must leave home to avoid conflict, but they felt guilty about rejecting their families and their ancestry (Ramirez, 1969).

Similarly, a study by Maldonado-Sierra, Trent, and Fernandez-Marina (1960) focused on Puerto Rican neurotics and matched non-neurotics. The non-neurotics were more accepting of traditional Hispanic beliefs than the neurotics on responses to an adjective checklist.

Denying one's ethnic heritage can cause great emotional stress (Simmons, 1961). When the value systems of emotionally healthy Mexican-Americans were compared, 50 per cent of the non-patients and only 22 per cent of the disturbed patients ascribed to clear cut traditional Anglo-American values. The patients expressed more mixed cultural values than the non-patients (Fabrega & Wallace, 1968). Thus, confusion about ethnic identity and personal identity were correlated with emotional problems.

Madsen (1969) concluded from clinical records that Mexican-Americans adopting Anglo values were more likely to suffer from anxiety, fear, guilt, and somatic problems than were unacculturated Mexican-Americans. Ramirez (1971) has also concluded that studies on acculturation have indicated that those individuals who have rejected their traditional values are more susceptible to mental stress.

Related to the onset of mental stress and its treatment in the Hispanic is the role of the Mexican "curandero" or

"folk healer." The curandero is sought for psychiatric disorders of a great range of severity. These psychological conflicts of Mexican-Americans are in some measure conditioned by a variety of social, familial, and cultural experiences. Devereux (1956) has stated that members of a given culture are likely to have repressed the same things and thereby to have certain unconscious conflicts in common. Therefore, the curandero uses these common cultural symptoms to design a treatment plan suited specifically to each client.

The curandero not only treats psychiatric disorders but various disorders labeled as "folk illness" such as "empacho" (undigested food which causes pain), "caida de la mollera" (fallen fontanelles), and "susto" (fright), among others. In many of these cases, there is no clear distinction in treating the physical symptoms apart from the psychological conflicts. Treatment consists of certain ritualized prescriptions performed by both curandero and patient.

In examining the significance of folk illnesses among acculturating Mexican-Americans, Madsen (1964) noted that one of the functions of folk illnesses was to provide a mechanism to avoid or relieve situations involving a conflict between Mexican and Anglo values. As Madsen writes:

> The individual who has internalized values
> from both subcultures usually at some point
> becomes aware of painful cognitive dissonance.

The individual's self-image loses its focus
and decision making becomes a matter of pro-
found anxiety. The partly acculturated
Inglesado finds identity with any recognized
role in either subgroup almost impossible.
He is scorned by the conservative Mexican-
Americans and refused admission to Anglo
society. Some Inglesados in this situation
seek closer identity to Anglo culture
through such means as conspicuous display
of Anglo mannerisms or conversion to a
Protestant church. Others seek to escape
geographically and move to another state
or to one of the larger cities in Texas.
Others attempt to retreat into the con-
servative Mexican-American culture. Those
who retreat are usually afflicted with a
series of folk diseases. As Anglos are
believed to be immune to such ailments,
merely being afflicted by one is a means
of cultural identification with la raza.
To accept the diagnosis and to cooperate
in the treatment are a declaration of ac-
ceptance of the conservative Mexican-
American world view. The treatment
involves the re-establishment of tra-
ditional roles and frequently some form of
penance. Such treatments are nearly al-
ways conducted by curanderos (Madsen, 1964,
p. 88).

Thus, disease among Mexican-Americans must be viewed

not only as a unique personal experience but also as a

social phenomenon with social explanations (Kiev, 1968).

In a few studies, level of acculturation is accompanied

by increased adjustment. In one study, Torres-Matrullo

(1974) administered a verbal interview and two personality

questionnaires to 18-55 year-old Hispanic females. Those

low on acculturation ranked higher on depression and ob-

sessive-compulsive indexes. A second study revealed no

correlation between acculturation and adjustment (Pruneda,

1973). When Mexican-Americans randomly selected from various grade levels were tested with an acculturation index, a personality questionnaire, and an achievement test, self concept did not correlate with level of acculturation (Pruneda, 1973).

Another study relating stress and acculturation dealt with immigrant adaptation. One argument is that migrants experience less stress in multicultural societies than in unicultural societies, and indeed may have better mental health than locial-born residents (Murphy, 1965). Berry (1980) points out that in multicultural societies, it is possible for groups to maintain a supportive cultural tradition, while in unicultural societies, there is a single dominant culture with a clear set of attitudes and values. Here, all immigrants must either adjust or oppose, leading to greater conflict and higher rates of stress and eventually to psychological breakdown.

Similarly, status inconsistency is likely to co-occur with urban migration or urban residence for newcomers to a city (Weisner, 1976). Urban migrants however, are not necessarily individuals who are always status inconsistent, especially if migration is a common part of the life cycle for members of that rural community (Weisner, 1976). Also, whether the status inconsistency of the occupational or employment situation is higher or lower than the family background appears to make a difference (Hinkle & Wolf, 1957).

Berry (1980), in summarizing the immigrant and native stress studies, proposes the following generalization: "Acculturative stress will be highest when the cultural distance is greatest and when the insistence that the journey be taken is strongest" (Berry, 1980, p. 22).

Another issue contributing to stress in Hispanics is the extended family. Burma (1967) contends that the extended family of the Mexican-American may prevent acculturation because the Mexican-American family stresses interdependence of kin and thus "runs counter to the American middle-class nuclear family pattern" (Burma, 1967, p. 87). Likewise, Kluckhohn and Strodtbeck (1961) believe the value of familism, along with other values including fatalism, a present-time orientation, and a value of "being" rather than "doing," are primarily responsible for the low rate of acculturation among the Mexican-Americans of New Mexico.

An alternative view is that acculturation is related to the breakdown of the extended family (Berry, 1980). Here, the adoption of Anglo values and modes of behavior, especially individualism, equality, and heightened attention to the nuclear family are reasons for abandonment of the extended family system (Grebler, Moore, & Guzman, 1970; Kramer, 1970; Penalosa, 1967). Similarly, Madsen (1964) states that "the Anglo ideal of the democratic family is slowly breaking down the Latin family, which is the stronghold

of La Raza" (Madsen, 1964, p. 48). The Group for the Advancement of Psychiatry finds an increasing orientation of individualism among Mexican-Americans, and "disorganization within the structure of the family is the striking result" (1970, p. 287).

There is evidence that acculturation stress may produce higher rates of problem drinking in Hispanics (Gilbert, 1977; Hall, Chaikin, & Piland, 1977). These authors state that persons of Spanish surname tend to be arrested for alcohol-associated offenses and to die from alcohol-associated causes more often than the general population. Other indicators of widespread problem drinking among the Spanish-speaking population include high rates of alcoholism as a problem in Hispanic communities (Hall et al., 1977).

Alcoholism among Hispanics may have a cultural etiology. It may, for example, develope as a defense against loss of cultural identity (Graves, 1967). According to interview data obtained from Mexican-American adults, alcoholism increased as acculturation increased (Graves, 1967). Graves pointed out how alcoholism may ease the pain of confused ethnic and personal identity.

Related to alcohol abuse is the problem of drug abuse as the result of the acculturation process. In a review of the literature, Szapocznik and Kurtines (1980) pointed out that Cuban families with the greatest intergenerational differences presented the most serious forms of symptomatic

behaviors--a drug abusing adolescent with high levels of
acting-out pathologies and poor school adjustment. In
these cases, the drug abusing youths not only manifested
pathological acting-out patterns but also had the highest
levels of acculturation. On the other hand, in those fam-
ilies in which mothers were least acculturated, their
underacculturation was accompanied by sedative and tran-
quilizer abuse which could be interpreted as a measure of
the stress they were experiencing (Szapocznik & Kurtines,
1980). Thus, drug abuse appeared to be a function of the
monoculturality (youth overacculturated, mothers underac-
culturated).

Finally, the problem of marginality and stress has been
compounded by another issue. This issue deals with the role
of minority students in institutions of higher education
(Rodriguez, 1974). Often, students who have had to sur-
render cultural and linguistic ties with their community
are viewed by university officials as representatives of
this same community. Added to this conflict is the self-
doubt created in many Hispanic students that their achievements
are due solely to compliance with affirmative action policies
by institutions of higher education rather than to their own
intellectual ability (Levine & Padilla, 1980).

From the literature, it appears that the process of
acculturation is related to the production of personal stress
and disease, including drug abuse and alcoholism, in

Mexican-Americans. Studies have also shown that acculturation can have both positive and negative consequences on the mental health of Hispanics.

Imagery and Disease

Imagery can be defined as a situation where an individual reports "seeing" or "picturing" something when there is no actual object present to the senses as in perception (Sheehan, 1979). Aristotle wrote that images serve as the sources of activation, and guide and direct behavior by representing the goal object (McMahon, 1973). Similarly, Hume discriminated between perceptions and sensations (McMahon, 1973). Many contemporary psychologists also view images as being capable of representing situations or objects, and as a result, acting as motivators for future behavior (Miller, Galanter, & Pribram, 1960; Mowrer, 1977; Sarbin, 1972).

The power of imagery to produce physiological changes has been demonstrated in a number of studies. For example, Simpson and Paivio (1966) observed changes in pupillary size during imagery. May and Johnson (1973) noticed that an increase in heart rate was produced by arousing images. Barber, Chauncey, and Winer (1964) reported that the request to imagine that a solution of tap water was sour led to increased salivation. Barber (1961, 1969) reported that images could produce blood glucose increases, inhibition of

gastrointestinal activity, increases in gastric acid secre-
tion, blister formation, salivation, and alterations in skin
temperature. Several studies of meditation and biofeed-
back, involving imagery, have reported reduction in blood
pressure, decreased oxygen consumption, control of gastro-
intestinal activity, slowing down of heartbeat, and increase
in body temperature (Allison, 1970; Bagchi & Wenger, 1972;
Lachman, 1972; Wallace, 1972). Cancer remission as a func-
tion of imaging has also been shown, but the evidence is
still very equivocal (Holden, 1978).

Imagery has also been investigated as a possible vari-
able in the hallucination processes of schizophrenic patients
(Brett & Starker, 1977; Slade, 1976), as a means of pain
control (Fenerstein, 1978; Grant, 1978; Greene & Reyher,
1972; McKinlay, 1979; Weinstein, 1976; Wescott & Horan,
1977), as a way to reduce anxiety and enhance the self-
concept (Bibin, 1975; Driscoll, 1976; Reardon & Tosi, 1977),
and as a means to cancer remission (Simonton, 1978).

Health and disease are phenomena which involve a com-
plex interaction of mental events, such as imagery, and
physical states (Weil, 1972). Weil writes:

> I mean that all illness has both psychic
> and physical components, and it seems to
> me that the physical manifestations of
> illness (including the appearance of germs
> in tissues) are always effects, while the
> causes always lie within the realm of the
> mind....In other words, the disease process
> seems to me to be initiated always by changes
> in consciousness. In the case of infectious

illness, the initial causative change is
not that germs appear to attack the body,
but that something happens in the person
that permits a breakdown of the harmonious
balance between the body and the micro-
organisms surrounding it (Weil, 1972,
p. 142).

Weil stresses that disease causing germs are always present
in our bodies and that disease occurs when there is an im-
balance of cognitive and physical factors. Also, Simonton
(1978) and Lazarus (1966) state that mental events seem to
influence autonomic processes and are reflected in disease.

In some cases of disease, there may appear physically
diagnosable symptoms but no observable diagnostic entity.
Miller (1975) terms these "psychosomatic," and examples are
ulcers and certain heart problems. Weil (1972) terms all
disease as psychosomatic, and proposes that even with diag-
nostic entities, the person has "opened up" the disease due
to certain mental states. McMahon (1976) stresses that
imagery holds a significant promise in the field of psycho-
somatic medicine, and that the number of diseases placed
in this category has steadily increased (Sheikh et al., 1979).

Some recent research dealing directly with the psy-
chosomatic personality further strengthens the conviction
that imagery offers an approach to psychosomatic problems
(Sheehan, 1979). It appears that individuals suffering
from these problems are often incapable of producing suf-
ficiently vivid images and have a tendency to orient

themselves toward external events rather than feelings
(Nemiah, 1973; Nemiah & Sifneos, 1970; Singer, 1976).

Weiner, Singer, and Reiser (1962) found that when res-
ponding to the Thematic Apperception Test, both hypertensive
and peptic ulcer patients dealt with the physical details
of the situation represented on the stimulus cards with
little or no emotional coloring or evoked imagery. Also,
no physiological changes were reported during the story-
telling.

The impact of emotions on the ability to image can in-
teract with other personality variables. For example, in a
unique study by Harris (1980), the relationship between
imagery measures and anxiety were investigated, among other
variables such as self-concept and stress. A significant
correlation was found between vividness of imagery and trait
anxiety. Using another measure of imagery, Harris also
found a relationship between emotive imagery, self-concept,
and disease. Harris writes:

> Those subjects with high emotive imagery
> displayed very little change in serious-
> ness of illness regardless of their self
> concept. However, low emotive imagery
> subjects varied greatly in seriousness of
> illness depending upon self-concept. For
> low emotive imagery subjects, the more
> positive their self-concept the lower their
> seriousness of illness; the more negative
> their self-concept the higher their serious-
> ness of illness (Harris, 1980, pp. 118-119).

Thus, low emotive imagery subjects with high self-concept
seem to be healthier than low emotive imagery individuals

with low self-concept. High emotive imagers with high self-concepts experienced more illness episodes than high emotive imagers with low self-concept.

Although psychosomatic patients appear to have difficulty imaging and orienting themselves toward feelings, imagery offers potential in helping to therapeutically elicit strong affect reactions in a clinical setting (Goldberger, 1957; Horowitz, 1972; Jellinek, 1949; Shapiro, 1970). Reyher and Smeltzer (1968) obtained higher physiological measures of anxiety for free imagery than for verbal free association. Sheehan (1979) found evidence in the literature that intensity of affect is one of the most important variables influencing the phenomenon of imagery. Goldberger (1957) has suggested that elements distorted by the image are related to areas of strong affect. Also, clinicians who extensively use induced images, notice that the image, in one way or another, is capable of being the focal point of strong affect (Ahsen, 1968; Desoille, 1965; Leuner, 1969). Furthermore:

> Images may have a greater capacity than the linguistic mode for the attraction and focusing of emotionally loaded associations in concentrated forms; verbal logic is linear; whereas the image is a simultaneous representation. The quality of simultaneity gives imagery greater isomorphism with the qualities of perception, and, therefore a greater capacity for descriptive accuracy (Sheikh & Panagiotou, 1975, p. 557).

Moreover, since imagery seems to be mediated by the right hemisphere, it is hardly surprising if it expresses relationships in certain areas of experience more elegantly than words do (Ornstein, 1972; Paivio, 1971; Pines, 1974).

Sheikh and Panagiotou (1975) did a comprehensive study of the use of imagery in clinical practice. They have suggested it should be used more frequently in counseling and psychotherapy. The authors state:

> It appears that the images hold an important potential for application in psychosomatic medicine. This application involves the release of affect represented by the psychosomatic symptoms and the possible facilitation of psychological control of physiological responses (Sheikh & Panagiotou, 1975, p. 581).

Clinicians use numerous and varied imagery techniques in dealing with psychosomatic and non-psychosomatic concerns of clients (Meichenbaum, 1978; Sheikh & Panagiotou, 1975; Singer, 1974). Wolpe's (1958) systematic desensitization, Cautela's (1977) covert conditioning, Lazarus's (1976) BASIC ID technique, Ahsen's (1968) eidetic psychotherapy, Leuner's (1969) guided affective imagery, and Morrison and Cometa's (1977) emotive-reconstructive psychotherapy all involve specific imagery techniques and affective invocations, as do many other behavioral and psychodynamic approaches to varying degrees.

As stated above, the relative inability to produce adequate imagery responses in psychosomatic patients continues

to be a nightmare for those clinicians interested in using imagery as the main tool for treatment. Fortunately, several possibilities are opening up. For example, it appears that even those individuals who do not have vivid imagery, with some encouragement and concentration, can visualize images from significant life situations in the past (Ahsen, 1977, 1978; Sheikh, 1978).

Regretfully, a review of the literature revealed no studies relating imagery and disease in the Mexican-American population. Research is greatly needed with Hispanics to determine whether imagery is a factor both in the production and in the treatment of disease.

In summary, the literature has indicated that imagery is used frequently in psychotherapy and in medical practice. Imagery is also investigated as a variable in psychological and physical illness. Different types of imagery techniques can alter various types of autonomic processes that are related to anxiety and stress responses and can interact with other variables such as anxiety and self-concept. The cross-cultural literature is sadly lacking in any research investigating the relationship between imagery and disease in Mexican-Americans.

Self-Concept, Anxiety, Stress, and Disease

Eisenberg (1979) defines the self-concept system as consisting of a "set of elements, in the form of beliefs or

perceptions, all of which are connected directly or indirectly to the other elements within the system" (pp. 11-12). At a more specific level, the belief elements of a person's self-concept will include a set of competency-specific appraisals (I-can-do-its and I-can't-do-its). Also attached to these appraisals will be a set of value loadings: positive, negative, conflicting, and sometimes neutral (Eisenberg, 1979). For example, individuals who have an unrealistic view of self tend to act unrealistically, while those who have a healthy concept of self also act accordingly or in a more optimistic manner than persons with a more negative view of self (Fitts, 1965).

There is limited research on the self-concept in relation to the Mexican-American. The extent of these studies have not compared the concept of self with stress, anxiety, nor disease, but with variables such as migration, acculturation, and values, all of which may contribute significantly to stress in Hispanics.

Gecas (1976) points out the differences in self-concept between "migrant" and "settled" Mexican-Americans. Migrants appear to be more firmly rooted in structural sources of identity (e.g., family, religion, work ethnicity) stemming from their cultural heritage than are the settled Mexican-Americans. Migrants had a more positive and in general a more favorable view of themselves than did the settled Hispanics. For both groups, the most important source of worth

was the family. Values placed on the family have been a source of emotional, psychological, and economic support. According to Gecas (1976), the Mexican-American woman, especially, tends to identify herself primarily as "mother" and only secondarily as "spouse." Family identities are also quite important for Hispanic men, but "work" and "occupation" compete with these for prominence. Gecas (1976) interprets the differences between migrant and settled Mexican-Americans as reflecting the psychological consequences of acculturation which is probably greater for settled populations of Hispanics than it is for the relatively more isolated migrants. Gecas also found that poor Mexican-Americans tend to think of themselves as "helpful" and "unselfish" people. Additionally, the most frequent ethnic label used by Mexican-American parents and children is "Mexican," and the second most frequent is "Mexican-American."

A number of researchers, using a variety of questionnaires, report that Hispanics do not perceive themselves less positively than Anglos perceive themselves (Albright, 1974). When the California Psychological Inventory was administered to Mexican-American and Anglo junior high students, Mexican-Americans scored higher than Anglos on social responsibility, tolerance, and intellectual fluency (Mason, 1967).

One interesting study suggests that self-concept is rising among Mexican-Americans (Dworkin, 1971). A

questionnaire was administered to Mexican-American students in Los Angeles and Denver in 1963 and 1968. In each case, the students perceived themselves as sensitive and emotional. These traits were considered to be more positive by the 1968 sample (Dworkin, 1971).

The concept of "anxiety" appears to be a multifaceted construct. Spielberger (1972) distinguishes between "state" and "trait" anxiety. The subjective feeling of tension and uneasiness accompanying a perception of danger or threat is defined as state anxiety. If a person is strongly disposed to experience such anxiety with high frequency and in situations that do not appear to be threatening to others, than the individual is said to have a high amount of trait anxiety. Thus, state anxiety is more situationally determined, while trait anxiety is a more permanent, less changeable characteristic (Spielberger, 1972).

Some of the more common efforts to measure the subjective feelings of anxiety are reflected in the research of Nowlis (Nowlis, 1961; Nowlis & Green, 1965), Cattell and Scheier (1961), Zuckerman (Zuckerman, 1960; Zuckerman & Lubin, 1965), Taylor (1953), McNair, Lorr, and Droppelman (1971), and Speilberger et al., (1970).

Spielberger (1972) points out a relationship between self-concept and anxiety. He says that individuals with high trait anxiety tend to be self-deprecatory and who suffer with fear of failure. Also, persons with high trait anxiety

react to threatening situations with higher state anxiety than those individuals with low trait anxiety.

Various studies have found a significant negative correlation between anxiety and self-concept (Donovan et al., 1975; Lauer, 1973; Mukherjee, 1969; Spielberger & Diaz-Guerrero, 1976). In a review, Thompson (1972) pointed out significant negative correlations between self-concept (Total P score on the Tennessee Self Concept Scale) and anxiety utilizing the following instruments: the Taylor Manifest Anxiety Scale, the Anxiety Differential Scale, the anxiety subscale of the Neuroticism Scale Questionnaire, the IPAT Anxiety Scale, and the State-Trait Anxiety Inventory. In general, the above studies have indicated that the lower the individual's self-concept, the more likely that individual would experience anxiety.

A review of the literature revealed few studies measuring anxiety in the Hispanic population. The extent of these studies have utilized Spielberger's et al., (1970) State-Trait Anxiety Inventory and Sarason's et al., (1960) Test Anxiety Scale. Most of the subjects in these investigations have been Hispanic children and few adults.

In an interesting study, Gonzalez-Reigosa (1976) cites evidence to suggest that bi-lingual Mexican-Americans experience greater anxiety in response to taboo words. In this study, bi-lingual men were separated into high and low level on A-Trait and were presented with taboo words in

English and in Spanish to see what effect that had upon their A-State scores and reaction times. The subjects showed higher A-State scores for taboo words in their mother tongue than in their second language. Also, the age at which the language was learned was a critical variable, which supports Weinrich's (1953) finding that stimuli whose emotional quality stems from childhood will arouse stronger emotions when experienced with relation to the mother tongue than in the second language (Gonzalez-Reigosa, 1976).

Diaz-Guerrero (1976) administered the Spanish version of the Test Anxiety Scale for Children to children from Mexico City who were matched with children from Austin, Texas. The Mexican subjects scored higher on the Test Anxiety Scale for Children than the American subjects did. Regardless of culture, the subjects from the lower socioeconomic class scored higher on the scale than those from the upper socioeconomic level. Also, the girls from both cultures obtained significantly higher anxiety scores than the boys, but the difference was not large.

D'Andrade (1966) has suggested that cross-cultural projective test results indicate greater anxiety and maladjustment in males. Assuming for the moment that both projective and self-report measures are tapping underlying anxiety, it is possible that discrepancies in the literature may be due to cultural variability. Ember (1981) states that in some cultural settings, men have more role conflict;

in others women may have more. Women in Western societies may have more anxiety because traditional women's roles (e.g., housewife and mother) are no longer so valued, hence they may suffer from anxiety because of role conflict. Ember (1981) also points out that men from other societies may have more anxiety because they may be subject to another kind of role conflict induced by acculturation pressures.

The cross-cultural discrepancy with regard to sex differences in anxiety could also be due to the use of different measuring devices in different cultural settings. Self-reports may give a totally different picture from projective tests. It may be that males are generally more anxious but less likely to admit weaknesses (Sarason, Hill, & Zimbardo, 1964). Only by employing both kinds of measures, self-report and projective tests, on the same individuals can we find out if both kinds of measures are tapping the same thing (Ember, 1981).

Since self-concept and anxiety are negatively correlated, what is their relationship to stress? Manuck, Hinrichsen, and Ross (1975) studied the relationship between life stress and state and trait anxiety. Subjects in a high stress condition reported significantly greater anxiety than subjects in a low stress condition on both state and trait anxiety scores.

Reavley (1974) gave 40 evening students and clerical workers the Social Readjustment Rating Scale, the Taylor

Manifest Anxiety Scale, the IPAT Anxiety Scale, and the
Symptom Rating Test. Results showed that a high concern
for one's self-concept appeared to relate highly to Social
Readjustment Rating Scale scores. The anxiety subscale and
the Social Readjustment Rating Scale correlated .69 which
was significant at the .001 level. Symptoms such as de-
pression and somatic concerns were also significantly
correlated with the Social Readjustment Rating Scale at the
.01 level.

Since it appears that life stress, self-concept, and
anxiety are related, how do these variables related to di-
sease? Reavley (1974) studied the relationship between
stress, self-concept, anxiety, and disease and found that
illness symptoms, somatic concerns, and inadequacy were sig-
nificantly correlated with the Social Readjustment Rating
Scale. There resulted in a negative relationship between
stress and concern for one's self-concept. Also utilizing
the Social Readjustment Rating Scale, Bedell et al., (1977)
studied chronically ill children high and low in stress.
Results showed that low stress children displayed signifi-
cantly more positive self-concepts and significantly less
episodes of daily illnesses.

In a unique study by Harris (1980), he found signif-
icant correlations between illness, anxiety, self-concept,
imagery, and a subjective evaluation of stress in junior
college subjects. Using multiple linear regression, five

variables made a significant contribution to stress as a predictor of disease; these were: trait anxiety, self-concept, visual imagery, an interaction of emotive imagery and self-concept, and a subjective evaluation of stress.

Branch (1968) also studied case histories of medical patients who suffered with anxiety and found a relationship between anxiety and the following diseases or other problems; these were: heart palpitations, skin and other allergies, stomach pain, obesity, and learning and speech disorders.

Lewis, Gottesman, and Gutstein (1979) administered to cancer and surgery patients the State-Trait Anxiety Inventory, the Social Readjustment Rating Scale, and the Rosenberg Self Concept Scale at admission and at 2, 5, and 8-week intervals. The cancer group displayed significantly higher anxiety scores at all times. Concerning self-concept, there were no significant differences at admission nor at two or five weeks. There was a significant difference at eight weeks when the surgery group scored more positively on self-concept than the cancer group.

A literature search done by the researcher did not reveal any studies comparing the relationship between anxiety, stress, and disease in the Mexican-American population. Nevertheless, the following cross-cultural study was found that compared state and trait anxiety in psychosomatic disorders.

Pancheri et al., (1976), using the Italian form of the State-Trait Anxiety Inventory, compared 370 Italian and U.S. patients having skin problems and heart disease. The females in all groups were consistently higher than males in A-State and A-Trait, and cardiopaths tended to be higher than dermopaths in A-Trait. The results also showed higher A-Trait scores for the Italian sample. The following is an analysis of results of the cardiopaths and dermopaths as a whole. First, dermopaths had significantly higher mean A-State scores than normals, while cardiopaths did not differ from normals in A-State; and second, cardiopaths had significantly higher mean A-Trait scores than normals, while dermopaths and normals did not differ in A-Trait. It was noted that the cardiopaths were presumably experiencing high levels of stress when they were tested. The authors interpret their results in the following:

> The disease mechanisms toward anxiety become very strong in cardiopaths during an acute failure of cardiac functioning.
> These defenses serve to protect the individual from free-floating anxiety and related arousal of the autonomic nervous system and help to preserve the homeostatic balance that is necessary for survival. We have also observed that cardiopaths use their disease to symbolize the need for inhibition and repression of disturbing effects, as happens in hysteria with conversion symptoms. Acute cardiopaths may also obtain emotional gratification from their illness.
> The anxiety reactions of dermopaths can be interpreted in three ways. First, the high A-State scores of dermopaths reflect their reaction to an illness that

mars and diminishes the individual's bodily
appearance, damages his self-image and ade-
quacy in interpersonal relations and results
in self-denigration that is reflected in
negative test-taking attitudes. Second,
from a more sophisticated point of view,
dermopaths seem to be characterized by less
developed defense mechanisms than cardio-
paths. In general, they have fewer personal
resources for coping with the threat to their
self-image that is evoked by their illness.
Third, assuming a theory that skin disease
is psychologically determined, the dermo-
pathic condition itself may be interpreted as
reflecting the immediate expression (con-
version) of state anxiety in individuals
whose psychological defense mechanism are
relatively inefficient (Pancheri et al.,
1976, pp. 131-132).

The above study has demonstrated well the interaction of
the cognitive mediating variable of anxiety with disease
production.

To summarize, it appears from the literature that there
is a significant negative relationship between anxiety and
self-concept. Studies tend to support a negative relation-
ship between self-concept and disease and a positive
relationship between anxiety and disease. The limited cross-
cultural research with Mexican-Americans and other ethnic
groups indicates similar relationships concerning cognitive
variables and disease.

Synthesis of the Research

The preceding review of the literature has indicated
that stress has been found to be related to disease. Anx-
iety, self-concept, acculturation, and imagery have also

been cited as contributing variables to disease formation. All of these variables may be involved in the cognitive mediation processes which take place between outside stressful factors and the autonomic events leading to disease. Also, it has been recognized that illness onset is the outcome of multiple characteristics of the individual interacting with a number of interdependent factors in the person's social context. Similarly, Rabkin and Struening (1976) and Harris (1980) have stressed the importance in considering intervening and mediating variables, some of which can easily lend themselves to standard measurement procedures.

One purpose of this study has been to look at mediating variables such as anxiety, imagery, acculturation, and self-concept, and how they interact in disease production in the Mexican-American population. It was the intent of this study to add these variables to stress to determine the possibility of increasing the efficiency of predicting disease.

The design of the present study is unique in that no other cross-cultural investigation has compared the above variables in a single study using multiple linear regression. The only similar stress study (non-cross-cultural) using linear regression was that of Harris (1980) whose sample consisted of 86 per cent Caucasian subjects. The present study utilized totally Mexican-American subjects from the West Texas area.

Finally, the literature concerning variables that mediate the impact of stressful events on individuals derives from so many sources that a generalized critical appraisal would be impossible. Some of the research summarized have represented well carried out laboratory studies with clearly stated dependent and independent variables. Other studies were based on samples of convenience and ad hoc measures of change. Nevertheless, the findings briefly summarized here have been reported by researchers working independently, with different populations. The results of their studies are cumulatively persuasive and have opened up a variety of areas for future investigations.

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CHAPTER III

METHODS AND PROCEDURES

Organization of the Study

The initial organization consisted of taking a brief description of the study with copies of the instruments to be utilized to the institution from which the subjects were drawn. After obtaining approval from the chairman of the psychology department to use those students as subjects, a meeting was held with the class instructors to explain each instrument and the administration procedures for the tests. After the data were collected, analyses were made at the North Texas State University Computing Center.

Instruments

The Betts Questionnaire on Vividness of Mental Imagery (QVMI) (Sheehan, 1967) is the most widely used and researched tool for measuring vividness of imagery (Di Vesta, 1971).

In 1901, Betts developed an instrument to measure the vividness of imagery, and in 1967, Sheehan shortened and revised the original instrument and developed the QVMI. Correlations between the original and shortened form are in the .90's (Richardson, 1969). The reliability measures of the seven subtests range from .91 to .63 (White et al., 1977).

During the validation of the QVMI, Sheehan (1967) in-
vestigated imagery in seven major sensory modalities: visual,
auditory, cutaneous, kinaesthetic, gustatory, olfactory,
and organic. Sheehan concluded that the short version of
the Bett's questionnaire can reliably predict subjects'
ability to image as well as the original version. In ex-
periments where it has been used, it has differentiated
subjects in their capacity to image on the sensory modalities
described above (Sheehan, 1966).

The Social Readjustment Rating Scale (SRRS) (Holmes &
Rahe, 1967) is an objective measure of stress developed
using methods from psychophysics (Holmes & Masuda, 1967).
The SRRS was built on the work done by Meyer (1951) concer-
ning his "life chart." In the development of the SRRS, Meyer's
data of over 5,000 patient histories were analyzed, and spe-
cific life changes which preceded major health changes were
determined empirically. The SRRS has been found to be ef-
fective in predicting major health changes (Dohrenwend &
Dohrenwend, 1974; Garrity et al., 1978; Holmes & Masuda, 1974;
Rahe, 1968; Wyler et al., 1970). Holmes and Rahe (1967) re-
port test-retest reliability is .74.

Studies have compared the rankings of physicians, col-
lege students, and numberous cultures and have found high
agreement concerning ranks (Dohrenwend & Dohrenwend, 1974;
Holmes & Rahe, 1967; Wyler et al., 1970).

The Seriousness of Illness Rating Scale (SIRS) (Wyler, Masuda, & Holmes, 1970) was developed to study the relationship between life change and illness onset. The SIRS has 126 items which are tank-ordered from least serious to most serious. In the initial study, Wyler, Masuda, and Holmes (1970) sent the 126 items to two groups of physicians who were instructed to rank order the items from least to most serious. The rank-order correlation coefficient between the two groups was .998. Wyler, Masuda, and Holmes (1970) also concluded from another study that the SIRS is a reliable scale concerning rank order regardless of medical training.

To assess the validity of the SIRS, Garrity, Marx, and Somes (1978) administered the following four measures relating to seriousness of illness: 1) number of days each health problem was experienced, 2) number of days that each health problem prevented the pursuit of normal activities, 3) a subjective evaluation of the seriousness of each health problem, and 4) a rating of the subjects' overall state of health. The authors found that the SIRS significantly related, beyond the .01 level, to all four measures. Garrity, Marx, and Somes (1978) concluded that the SIRS is truly tapping a dimension related to illness seriousness and severity.

In order to determine whether there was a relationship between a subject's perception of stress and an external measure of stress, a one-item rating scale devised by Harris (1980) was used, the subjective feeling of stress question (SS).

In Harris' study, subjects were asked to rate themselves on a scale from 1 to 7 indicating how much stress they had experienced during the past twelve months. The Seriousness of Illness Rating Scale and the Social Readjustment Rating Scale were administered, along with other scales, to 188 junior college subjects. Harris found that the subjective evaluation of stress item correlated more highly with seriousness of illness than did the stressful life events measure, and explained a larger proportion of the variance.

The State-Trait Anxiety Inventory (STAI) (Spielberger, Gorsuch, & Lushene, 1970) is considered by Anastasi (1976) to be one of the best measures of anxiety available. The test discriminates between state anxiety (how the individual feels at the moment) and trait anxiety (how the individual generally feels). Reliabilities on the A-Trait section range from .73 to .86 while on the A-State section, reliabilities range from .16 to .54. The lower reliability coefficients for the A-State scale are "anticipated because a valid measure of A-State should reflect the influence of unique situational factors existing at the time of testing" (Spielberger et al., 1970, p. 9). Kuder Richardson reliabilities were quite high for both scales (.83 - .92) (Anastasi, 1976).

The Tennessee Self Concept Scale (TSCS) (Fitts, 1965) is a widely used instrument for measuring concept of self. Buros (1972) states it is extensively used in both clinical

and experimental research. The scale consists of 100 self descriptive statements which the subject uses to portray a picture of himself. The TSCS is self-administering for either individuals or groups and can be used with subjects age 12 or higher and having at least a sixth grade reading level. It is also applicable to the whole range of psychological adjustment from healthy, well adjusted people to psychotic patients (Fitts, 1965).

The total positive score (P) of the TSCS was used in the present study as a measure of self-concept. Concerning the test's reliability, Fitts (1965) reports test-retest reliability of .92 for the total positive score. For validity, the manual reports a correlation of -.70 between the P score and the Taylor Manifest Anxiety Scale. Numerous research studies have shown a significant negative correlation between measures of self-concept (as measured by the TSCS) and anxiety (Fitts, 1972a, 1972b; Thompson, 1972).

The scale of acculturation (AS) (Olmedo, Martinez, & Martinez, 1978) is a two-part paper and pencil measure of acculturation developed using multiple regression techniques. The initial samples consisted of 924 Chicano and Anglo adolescent and junior college subjects. The first part of the test consists of Semantic Differential Potency items in which each of three concepts, "mother," "father," and "male" are rated on seven pairs of bipolar adjectives (i.e., "mother" appears followed by "serious-humorous," "rough-smooth,"

"ugly-beautiful," "delicate-rugged," "safe-dangerous,"
"commonplace-unique," and "simple-complex"). The two ad-
jectives in each pair are randomly located at opposite ends
of a seven-point graphic scale. Subjects respond by placing
a checkmark on the scale separating the adjectives in each
pair. The second part of the instrument consists of 10 items
covering background information concerning the subject, his
family, the head of household, and the language spoken at
home. Each category is scored 1 or 0 depending on whether
the subject has or has not checked the category as applicable.

Olmedo's et al., (1978) measure of acculturation is
based on an empirical discrimination of Chicano and Anglo
responses on the potency dimension of the semantic differ-
ential and socioeconomic and demographic variables.
Statistical treatment of the cross-validated sample of Chi-
canos and Anglos yielded a highly significant coefficient
($r = .73$, $F = 21.70$, df 22,444, $p < .0001$). Validity coef-
ficients range from .66 to .85. Test-retest reliability
coefficients range from .66 to .89 (Olmedo et al., 1978).

Population and Subjects

The population sampled was a community college in the
West Texas area with a total enrollment of approximately
11,000 students. The sample consisted of a nonrandom se-
lection of eight introductory psychology classes (four day
classes and four night classes), consisting of 240 students.

Seventy-one per cent of the total students tested were Mexican-American. Eight students were dropped from the study due to their inability to complete the total battery of instruments, leaving a sample size of 172 Mexican-Americans ranging in age from 17 to 58 years. The average age of the males (40% of the sample) was 27 years, while the average age of the females (60% of the sample) was 25 years.

Procedures for Data Collection

Permission was granted by the chairman of the psychology department of the institution for the testing of eight intact classes. A meeting with the department chairman was held to discuss testing time. The Tuesday, Thursday, and night classes were selected in order to allow sufficient time for testing. Duration of class time was: (Tuesday and Thursday classes - 1 hr., 30 min.; night classes - 3 hrs.). Testing was completed in one class session during the Spring semester of 1981.

Appointments were made with the instructors of each class to discuss the specific tests with them. Specific instructions were given to each instructor (Appendix A) to insure uniform testing procedures. All of the instructors (who had at least a Masters degree in psychology and had experience in administering psychological tests) were full-time faculty of the institution and were not informed of the purposes of the study until data collection was completed.

The following instruments were administered to all classes: 1) the scale of acculturation, 2) the State-Trait Anxiety Inventory, 3) the Social Readjustment Rating Scale, 4) the Questionnaire on Vividness of Mental Imagery, 5) the Tennessee Self Concept Scale, 6) the Seriousness of Illness Rating Scale, and 7) a question concerning a subjective feeling of stress.

The above tests were given in random order (except for the Seriousness of Illness Rating Scale) by class by the instructor of each class. This test randomization was done by the researcher utilizing a table of random numbers. The Seriousness of Illness Rating Scale was given last so this particular test would not aid the subjects in discovering the purposes of the study.

The non-Mexican-American students were also administered the instruments because these students could not be dismissed from class time. Another reason for testing whole classes was to reduce any defensiveness that might occur in singling out the Mexican-American students.

After testing was completed, the researcher discussed with each class the specifics of the research project.

Procedures for Data Analysis

After the data collection was completed, the instruments were hand scored by the investigator and they key punched onto IBM cards by the North Texas State University

Computing Center. The analysis consisted of using Pearson product-moment correlation coefficients between the variables and a test for the significance of each correlation (α set at .05). Multiple linear regression was utilized using the following model by Harris (1980).

$$Y = a_1X_1 + a_2X_2 + \ldots a_8X_8 + E$$

Y = Scores on the Seriousness of Illness Rating Scale

When X_1 = Scores on the Questionnaire on Vividness of Mental Imagery

When X_2 = Scores on the measure of acculturation

When X_3 = Scores on the A-State section of the State-Trait Anxiety Inventory

When X_4 = Scores on the A-Trait section of the State-Trait Anxiety Inventory

When X_5 = Scores on the Social Readjustment Rating Scale

When X_6 = Scores on the Tennessee Self Concept Scale

When X_7 = Scores on the subjective feeling of stress

When X_8 = A vector discriminating males from females (Sex)

The first eight hypotheses were tested using a correlation matrix and a test for significant correlations. The basic model for hypotheses 9-19 was $Y = X_5 + E$. Using this as the basic stress model, the following vactors were added to test the following models (α set at .05).

Hypothesis 9: $Y = X_5 + X_1 + E$

Hypothesis 10: $Y = X_5 + X_3 + E$

Hypothesis 11: $Y = X_5 + X_4 + E$

Hypothesis 12: $Y = X_5 + X_6 + E$

Hypothesis 13: $Y = X_5 + X_2 + E$

Hypothesis 14: $Y = X_5 + X_7 + E$

Hypothesis 15: $Y = X_5 + X_8 + E$

Hypothesis 16: $Y = X_5 + X_6 + X_1 + E$

Hypothesis 17: $Y = X_5 + X_2 + X_6 + E$

Hypothesis 18: $Y = X_5 + X_2 + X_4 + E$

Hypothesis 19 was tested by selecting as the initial predicting variable, the variable with the highest correlation with seriousness of illness. Each variable was then selected on the basis that it would contribute to the largest increase in R^2 compared to all the other variables left out of the model. Variables were then added, one at a time in a stepwise manner, in order to find the fewest and most efficient predictors of seriousness of illness.

Limitations of Study

1. The measurement of acculturation, imagery, stress, anxiety, self-concept, and disease is limited to the sophistication of the instruments being utilized and the honesty of the respondents.

2. The subjects were limited to community college students.

3. The causality in a correlational study is questionable.

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CHAPTER IV

PRESENTATION OF DATA ANALYSIS

The purpose of this chapter is to present the results of the data analysis concerning the hypotheses tested in this study. Each hypothesis was restated in the null form for the purposes of statistical analysis. A level of significance of .05 was set as the criterion for either retaining or rejecting each hypothesis. Hypotheses 1-8 investigated the correlations between the variables and were restated in the null as follows:

1. There will be no significant correlation between imagery and self-concept as determined by scores on the Questionnaire on Vividness of Mental Imagery and the Tennessee Self Concept Scale.

2. There will be no significant correlation between imagery and trait anxiety as determined by scores on the Questionnaire on Vividness of Mental Imagery and the State-Trait Anxiety Inventory.

3. There will be no significant correlation between stress and seriousness of illness as determined by scores on the Social Readjustment Rating Scale and the Seriousness of Illness Rating Scale.

4. There will be no significant correlation between acculturation and self-concept as determined by scores on the scale of acculturation and the Tennessee Self Concept Scale.

5. There will be no significant correlation between acculturation and state anxiety as determined by scores on the scale of acculturation and the State-Trait Anxiety Inventory.

6. There will be no significant correlation between self-concept and trait anxiety as determined by scores on the Tennessee Self Concept Scale and the State-Trait Anxiety Inventory.

7. There will be no signficant correlation between stress and acculturation as determined by scores on the Social Readjustment Rating Scale and the scale of acculturation.

8. There will be no significant correlation between stress and state anxiety as determined by scores on the Social Readjustment Rating Scale and the State-Trait Anxiety Inventory.

From Table I on the following page, it can be seen that the correlation between imagery scores (QVMI) and self-concept scores (TSCS) was -.26 which was significant at the .001 level. Therefore, null hypothesis 1 was rejected. Since high scores on the QVMI indicate low imagery vividness, and low scores indicate high vividness, the nature of

the relationship showed that the higher the self-concept, the greater the vividness of imagery.

The correlation between imagery scores (QVMI) and trait anxiety scores (A-Trait) was .17 which was significant at the .01 level. Therefore, null hypothesis 2 was rejected. The nature of the relationship showed that the lower the trait anxiety, the greater the vividness of imagery.

TABLE I

A MATRIX OF CORRELATIONAL VALUES AND SIGNIFICANCE
LEVELS AMONG VARIABLES EXAMINED

Variables	SEX	A-STATE	A-TRAIT	SRRS	SIRS	QVMI	TSCS	SS	AS
SEX	1								
A-STATE	-.02	1							
A-TRAIT	.01	.81 ***	1						
SRRS	.08	.00	.12	1					
SIRS	.06	.12	.26 ***	.31 ***	1				
QVMI	.03	.11	.17 **	.09	.03	1			
TSCS	.01	-.72 ***	-.77 ***	-.13 *	-.20 **	-.26 ***	1		
SS	-.05	.41 ***	.43 ***	.10	.27 ***	.25 ***	-.35 ***	1	
AS	-.03	.13 *	.14 *	.13 *	.18 **	.10	-.08	.19 **	1

* p < .05   ** p < .01   *** p < .001

The correlation between stress scores (SRRS) and seriousness of illness scores (SIRS) was .31 which was significant at the .001 level. Therefore, null hypothesis 3 was rejected. The nature of the relationship showed that as external life event scores increased, so did seriousness of illness scores.

The correlation between acculturation scores (AS) and self-concept scores (TSCS) was -.08 which was not significant. Therefore, null hypothesis 4 was retained.

The correlation between acculturation scores (AS) and state anxiety scores (A-STATE) was .13 which was significant at the .05 level. Therefore, null hypothesis 5 was rejected. The nature of the relationship showed that the higher the acculturation level, the higher the state anxiety which was experienced.

The correlation between self-concept scores (TSCS) and trait anxiety scores (A-TRAIT) was -.77 which was significant at the .001 level. Therefore, null hypothesis 6 was rejected. The nature of the relationship showed that the higher the self-concept, the lower the amount of trait anxiety experienced.

The correlation between stress scores (SRRS) and acculturation scores (AS) was .13 which was significant at the .05 level. Therefore, hull hypothesis 7 was rejected. The nature of the relationship indicated that as stress scores increased, acculturation scores also increased.

The correlation between stress scores (SRRS) and state anxiety scores (A-STATE) was .00 which was not significant. Therefore, null hypothesis 8 was retained.

Hypotheses 9 through 19 investigated the efficiency of the prediction of seriousness of illness scores using selected variables and were restated in the null form as follows:

9. Using the stress model (SRRS) as a predictor of disease (SIRS), no significant increase in R^2 will be obtained when imagery (QVMI) is added to the model.

10. Using the stress model (SRRS) as a predictor of disease (SIRS), no significant increase in R^2 will be obtained when state anxiety (STAI) is added to the model.

11. Using the stress model (SRRS) as a predictor of disease (SIRS), no significant increase in R^2 will be obtained when trait anxiety (STAI) is added to the model.

12. Using the stress model (SRRS) as a predictor of disease (SIRS), no significant increase in R^2 will be obtained when self-concept (TSCS) is added to the model.

13. Using the stress model (SRRS) as a predictor of disease (SIRS), no significant increase in R^2 will be obtained when acculturation (AS) is added to the model.

14. Using the stress model (SRRS) as a predictor of disease (SIRS), no significant increase in R^2 will be obtained when the subjective stress item (SS) is added to the model.

15. Using the stress model ($\underline{SRRS}$) as a predictor of disease ($\underline{SIRS}$), no significant increase in R^2 will be obtained when a vector discriminating males from females is added to the model.

16. Using the stress model ($\underline{SRRS}$) as a predictor of disease ($\underline{SIRS}$), no significant increase in R^2 will be obtained when a multiplicative combination of self-concept ($\underline{TSCS}$) and imagery ($\underline{QVMI}$) is added to the model. That is, there will be no significant interaction between self-concept and imagery.

17. Using the stress model ($\underline{SRRS}$) as a predictor of disease ($\underline{SIRS}$), no significant increase in R^2 will be obtained when a multiplicative combination of acculturation ($\underline{AS}$) and self-concept ($\underline{TSCS}$) is added to the model. That is, there will be no significant interaction between acculturation and self-concept.

18. Using the stress model ($\underline{SRRS}$) as a predictor of disease ($\underline{SIRS}$), no significant increase in R^2 will be obtained when a multiplicative combination of acculturation ($\underline{AS}$) and trait anxiety ($\underline{STAI}$) is added to the model. That is, there will be no significant interaction between acculturation and trait anxiety.

19. The most efficient model in predicting seriousness of illness ($\underline{SIRS}$) will not be acculturation ($\underline{AS}$).

Table II on the following page reflects the results of adding a vector representing each variable, individually

to a vector representing $\underline{SRRS}$ scores as predictors of $\underline{SIRS}$ scores. A vector representing each variable was added, one at a time, then removed from the model, and another vector representing another variable was added in order to find the contribution to R^2 provided by each variable and in order to provide a test for the hypotheses. In Table II, the R^2 increase signifies the square of the semipartial correlation coefficient for each variable. The $\underline{SRRS}$ scores

TABLE II

SIGNIFICANCE OF INCREASE IN R^2 ADDING EACH VARIABLE
ALONE TO LIFE STRESS AS PREDICTORS OF
SERIOUSNESS OF ILLNESS

Variables	Multiple R	R^2	Increase R^2	df	$\underline{F}$
SRRS	.31	.09	---	1/170	17.79 **
QVMI	.31	.09	.01	2/169	8.85 **
A-STATE	.33	.11	.02	2/169	10.57 **
A-TRAIT	.38	.15	.05	2/169	14.44 **
TSCS	.35	.12	.03	2/169	11.70 **
AS	.37	.13	.04	2/169	13.17 **
SS	.39	.15	.06	2/169	15.16 **
SEX	.31	.10	.01	2/169	9.05 **

* $p < .05$
** $p < .01$

predicting SIRS scores was the basic stress model. The SRRS scores alone were significant predictors of SIRS scores with a multiple R of .31 which accounted for 9 per cent of the variance and was significant F (1, 170) = 17.79, p < .01.

There was a significant increase in R^2 when imagery scores (QVMI) were added to stressful life events scores (SRRS) as predictors of seriousness of illness scores (SIRS). The multiple R was .31 which accounted for 9 per cent of the variance, an increase in R^2 of .01. This increase was significant F (2, 169) = 8.85, p < .01. Therefore, null hypothesis 9 was rejected.

The beta weights for this model were: SRRS was .307; QVMI was .010 with a constant of 9.53. This indicated that as QVMI scores increased, holding SRRS constant, SIRS scores tended to decrease.

There was a significant increase in R^2 when state anxiety scores (A-STATE) were added to stressful life events scores (SRRS) as predictors of seriousness of illness scores (SIRS). The multiple R was .33 which accounted for 11 per cent of the variance, an increase in R^2 of .02. This increase was significant F (2, 169) = 10.57, p < .01. Therefore, null hypothesis 10 was rejected.

The beta weights for this model were: SRRS was .308; A-STATE was .128 with a constant of 7.72. This indicated

that as A-STATE scores increased, holding SRRS constant, SIRS scores tended to increase.

There was a significant increase in R^2 when trait anxiety scores (A-TRAIT) were added to stressful life events scores (SRRS) as predictors of seriousness of illness scores (SIRS), F (2, 169) = 14.44, p < .01. The multiple R was .38 which accounted for 15 per cent of the variance, an increase in R^2 of .05. Therefore, null hypothesis 11 was rejected.

The beta weights for this model were: SRRS was .278; A-TRAIT was .228 with a constant of 5.71. This indicated that as A-TRAIT scores increased, holding SRRS constant, SIRS scores tended to increase.

There was a significant increase in R^2 when self-concept scores (TSCS) were added to stressful life events scores (SRRS) as predictors of seriousness of illness scores (SIRS), F (2, 169) = 11.70, p < .01. The multiple R was .35 which accounted for 12 per cent of the variance, an increase in R^2 of .03. Therefore, null hypothesis 12 was rejected.

The beta weights for this model were: SRRS was .286; TSCS was -.165 with a constant of 17.00. This indicated that as TSCS scores increased, holding SRRS constant, SIRS scores tended to decrease.

There was a significant increase in R^2 when acculturation scores (AS) were added to stressful life events scores (SRRS) as predictors of seriousness of illness scores (SIRS),

F (2, 169) = 13.17, p < .01. The multiple R was .37 which accounted for 13 per cent of the variance, an increase in R^2 of .04. Therefore, null hypothesis 13 was rejected.

The beta weights for this model were: SRRS was .314; AS was .200 with a constant of 7.61. This indicated that as AS scores increased, holding SRRS constant, SIRS scores tended to increase.

There was a significant increase in R^2 when subjective stress scores (SS) were added to stressful life events scores (SRRS) as predictors of seriousness of illness scores (SIRS), F (2, 169) = 15.16, p < .01. The multiple R was .39 which accounted for 15 per cent of the variance, an increase in R^2 of .06. Therefore, null hypothesis 14 was rejected.

The beta weights for this model were: SRRS was .282; SS was .240 with a constant of 5.95. This indicated that as SS scores increased, holding SRRS constant, SIRS scores tended to increase.

There was a significant increase in R^2 when a vector discriminating sex was added to stressful life events scores (SRRS) as predictors of seriousness of illness scores (SIRS), F (2, 169) = 9.05, p < .01. The multiple R was .31 which accounted for 10 per cent of the variance, an increase in R^2 of .01. Therefore, null hypothesis 15 was rejected. The nature of the relationship indicated that females tended to score higher on the SIRS than did males.

The interaction between the <u>Tennessee Self Concept Scale</u> (<u>TSCS</u>) and the <u>Questionnaire on Vividness of Mental Imagery</u> (<u>QVMI</u>) is shown below in Table III. The table shows the variance and associated F values when <u>TSCS</u>, <u>QVMI</u>, and the interaction <u>TSQV</u> were added, in that order, one at a time to <u>SRRS</u> scores as predictors of <u>SIRS</u> scores. The interaction was not significant, F (4, 167) = 1.05. Therefore, null hypothesis 16 was retained.

TABLE III

SIGNIFICANCE OF INTERACTION OF SELF CONCEPT AND
VIVIDNESS OF IMAGERY ADDED TO LIFE STRESS AS
PREDICTORS OF SERIOUSNESS OF ILLNESS

Variables	Multiple R	R^2	Increase R^2	df	F
SRRS	.31	.09	---		
TSCS	.35	.12	.02	3/168	.034
QVMI	.30	.09	.00	4/167	.920
TSQV	.36	.13	.01	4/167	1.058 ns

* $p < .05$

** $p < .01$

The interaction between the scale of acculturation (<u>AS</u>) and the <u>Tennessee Self Concept Scale</u> (<u>TSCS</u>) is shown in Table IV. The table shows the variance and associated F values when <u>AS</u>, <u>TSCS</u>, and the interaction <u>ASTS</u> were added, in that order,

one at a time to SRRS scores as a predictor of SIRS scores. The interaction was not significant, F (4, 167) = 1.51. Therefore, null hypothesis 17 was retained.

TABLE IV

SIGNIFICANCE OF INTERACTION OF ACCULTURATION
AND SELF CONCEPT ADDED TO LIFE STRESS AS
PREDICTORS OF SERIOUSNESS OF ILLNESS

Variables	Multiple R	R^2	Increase R^2	df	F
SRRS	.31	.09	---		
AS	.39	.15	.03	3/168	2.283
TSCS	.34	.12	.02	4/167	.093
ASTS	.40	.16	.00	4/167	1.510 ns

* p < .05

** p < .01

The interaction between the scale of acculturation (AS) and the State-Trait Anxiety Inventory (STAI) is shown in Table V. The table shows the variances and associated F values when AS, STAI (A-TRAIT), and the interaction ASST were added, in that order, one at a time to SRRS scores as predictors of SIRS scores. The interaction was not significant, F (4, 167) = .024. Therefore, null hypothesis 18 was retained.

TABLE V

SIGNIFICANCE OF INTERACTION OF ACCULTURATION
AND TRAIT ANXIETY ADDED TO LIFE STRESS AS
PREDICTORS OF SERIOUSNESS OF ILLNESS

Variables	Multiple R	R^2	Increase $R2$	df	F
SRRS	.38	.15	---		
AS	.41	.17	.02	3/168	.232
STAI (A-TRAIT)	.26	.06	.06	4/167	.903
ASST	.41	.17	.00	4/167	.024 ns

* $p < .05$

** $p < .01$

The most efficient predictors of seriousness of illness are shown in rank order in Table VI on the following page. The initial predictor was selected by correlating all vectors with the vector representing SIRS scores, and beginning the prediction by using the vector with the highest correlation with SIRS scores. Each vector was selected on the basis that it would lead to the largest increase in R^2. Vectors were then selected one at a time and placed in the regression model, in a stepwise manner, regardless of the variables represented.

The most efficient predictors, in rank order, that reached significance in this model were: 1) life stress

events (SRRS), F (1, 170) = 12.27, p < .01; 2) subjective stress (SS), F (2, 169) = 5.73, p < .05; and 3) level of acculturation (AS), F (3, 168) = 4.61, p < .05. Therefore, null hypothesis 19 was retained.

TABLE VI

THE MOST EFFICIENT PREDICTORS OF SERIOUSNESS OF
ILLNESS SCORES USING STEPWISE REGRESSION

Step Variable	Multiple R	R^2	Increase R^2	df	F
1. SRRS	.307	.094	.094	1/170	12.27 **
2. SS	.390	.152	.057	2/169	5.73 *
3. AS	.419	.176	.024	3/168	4.61 *
4. A-TRAIT	.438	.191	.015	4/167	3.87
5. A-STATE	.453	.205	.013	5/166	3.30
6. QVMI	.459	.211	.005	6/165	1.52
7. SEX	.463	.214	.003	7/164	.70
8. TSCS	.465	.216	.001	8/163	.36

* p < .05

** p < .01

CHAPTER V

SUMMARY, DISCUSSION, IMPLICATIONS
AND RECOMMENDATIONS

Summary

This study investigated the relationships between ac-
culturation, imagery, self-concept, anxiety, stress, and
seriousness of illness in order to determine the role of
cognitive mediating variables, such as self-concept, ac-
culturation, anxiety, and imagery, to significantly increase
the efficiency of stress to predict seriousness of illness
in Mexican-Americans.

A total of 240 subjects, a sample of convenience, were
selected from eight intact introductory psychology classes
from a community college in the West Texas area. From those
240 subjects, the data from purely the Mexican-American sub-
jects were used for analysis. Eight of the subjects were
dropped from the study due to an inability to complete the
battery of tests, leaving a sample of 172 Mexican-Americans
ranging in age from 17 to 58 years. Forty per cent of the
sample (males) had an average age of 27, while 60 per cent
of the sample were females with an average age of 25 years.

The following instruments were randomly ordered by the
researcher and administered by each class instructor with
the exception that the Seriousness of Illness Rating Scale

was given last so that the subjects would not become aware
of the purposes of the study:

1. the Social Readjustment Rating Scale

2. the Tennessee Self Concept Scale

3. the scale of acculturation

4. the State-Trait Anxiety Inventory

5. the Questionnaire on Vividness of Mental Imagery

6. the subjective evaluation of stress

7. the Seriousness of Illness Rating Scale

Hypothesis 1 through 8 were treated statistically using
Pearson correlation coefficients and a t-test for signifi-
cance of correlation. Hypothesis 9 through 19 were treated
statistically by using multiple linear regression.

Hypothesis 1 stated that, there will be a significant
positive correlation between imagery and self-concept as
determined by scores on the Questionnaire on Vividness of
Mental Imagery and the Tennessee Self Concept Scale. The
results from the correlation supported this hypothesis and
therefore it was accepted.

Hypothesis 2 stated that, there will be a significant
correlation between imagery and trait anxiety as determined
by scores on the Questionnaire on Vividness of Mental Imagery
and the State-Trait Anxiety Inventory. The results from
the correlation supported this hypothesis, and therefore it
was accepted.

Hypothesis 3 stated that, there will be a significant positive correlation between stress and seriousness of illness as determined by scores on the Social Readjustment Rating Scale and the Seriousness of Illness Rating Scale. The results from the correlation supported the hypothesis, and therefore it was accepted.

Hypothesis 4 stated that, there will be a signficant positive correlation between acculturation and self-concept as determined by scores on the scale of acculturation and the Tennessee Self Concept Scale. The results from the correlation did not support this hypothesis, and therefore it was rejected.

Hypothesis 5 stated that, there will be no significant correlation between acculturation and state anxiety as determined by scores on the scale of acculturation and the State-Trait Anxiety Inventory. The results from the correlation did not support this hypothesis, and therefore it was rejected.

Hypothesis 6 stated that, there will be a significant negative correlation between self-concept and trait anxiety as determined by scores on the Tennessee Self Concept Scale and the State-Trait Anxiety Inventory. The results from the correlation supported this hypothesis, and therefore it was accepted.

Hypothesis 7 stated that, there will be a significant positive correlation between stress and acculturation as

determined by scores on the <u>Social Readjustment Rating Scale</u> and the scale of acculturation. The results from the correlation supported this hypothesis, and therefore it was accepted.

Hypothesis 8 stated that, there will be no significant correlation between stress and state anxiety as determined by scores on the <u>Social Readjustment Rating Scale</u> and the <u>State-Trait Anxiety Inventory</u>. The results from the correlation supported this hypothesis, and therefore it was accepted.

Hypothesis 9 stated that, using stress as a predictor of disease, a significant increase in R^2 will be obtained when imagery is added to the basic stress model. The results from the multiple linear regression supported this hypothesis, and therefore it was accepted.

Hypothesis 10 stated that, using stress as a predictor of disease, no significant increase in R^2 will be obtained when state anxiety is added to the basic stress model. The results from the multiple linear regression did not support this hypothesis, and therefore it was rejected.

Hypothesis 11 stated that, using stress as a predictor of disease, a significant increase in R^2 will be obtained when trait anxiety is added to the basic stress model. The results from the multiple linear regression supported this hypothesis, and therefore it was accepted.

Hypothesis 12 stated that, using stress as a predictor of disease, a significant increase in R^2 will be obtained when self-concept is added to the basic stress model. The results from the multiple linear regression supported this hypothesis, and therefore it was accepted.

Hypothesis 13 stated that, using stress as a predictor of disease, a significant increase in R^2 will be obtained when acculturation is added to the basic stress model. The results from the multiple linear regression supported this hypothesis, and therefore it was accepted.

Hypothesis 14 stated that, using stress as a predictor of disease, a significant increase in R^2 will be obtained when subjective stress is added to the basic stress model. The results from the multiple linear regression supported this hypothesis, and therefore it was accepted.

Hypothesis 15 stated that, using stress as a predictor of disease, a significant increase in R^2 will be obtained when a vector discriminating sex (males from females) is added to the basic stress model. The results from the multiple linear regression supported this hypothesis, and therefore it was accepted.

Hypothesis 16 stated that, using stress as a predictor of disease, a significant increase in R^2 will be obtained when a multiplicative combination of self-concept and imagery is added to the basic stress model. The results of the

multiple linear regression did not support this hypothesis, and therefore it was rejected.

Hypothesis 17 stated that, using stress as a predictor of disease, a significant increase in R^2 will be obtained when a multiplicative combination of acculturation and self-concept is added to the basic stress model. The results of the multiple linear regression did not support this hypothesis, and therefore it was rejected.

Hypothesis 18 stated that, using stress as a predictor of disease, a significant increase in R^2 will be obtained when a multiplicative combination of acculturation and trait anxiety is added to the basic stress model. The results of the multiple linear regression did not support this hypothesis, and therefore it was rejected.

Hypothesis 19 stated that, the most efficient model in predicting disease will be level of acculturation. The results of the multiple linear regression did not support this hypothesis, and therefore it was rejected. The most efficient predictor was stressful life events, followed in rank order by subjective stress and level of acculturation.

Discussion

Hypothesis 1 investigated the relationship between vividness of imagery and self-concept. A significant correlation between the variables was found. It should be noted, even though the correlation is -.26, the relationship

is positive due to the fact that on the Questionnaire on Vividness of Mental Imagery, low scores indicate high imagery and high scores indicate low imagery abilities. The direction of the correlation indicates that subjects with high scores on imagery vividness tend to score high on self-concept. These results are consistent with those of Harris (1980). Di Vesta (1971) gives an interpretation of this relationship. He states that in introspective measures of imagery, such as measured by the Questionnaire on Vividness of Mental Imagery, may be confounded with social desirability. Di Vesta points out that subjects who want to be viewed as having "good" imagery also desire to be seen as having "good" self-concept. There are also inconsistent results in studies by White, Sheehan, and Ashton (1977) on this issue of social desirability. These authors claim that nowhere in a book by Richardson (1969) could the investigators find where response bias, need for approval, or similar behavioral qualities were considered in the interpretation of the data presented.

Hypothesis 2 examined the relationship between vividness of imagery and trait anxiety. A significant correlation was found between the variables, in that the higher the vividness of imagery, the lower the trait anxiety. These results are also consistent with the relationship found by Harris (1980). Both Harris and Di Vesta interpret these results as further evidence that the Questionnaire on Vividness

<u>of Mental Imagery</u> could be confounded with social desirability in that subjects with high trait anxiety tend to worry and perceive themselves negatively, and this could be related to the relationship found between imagery vividness and trait anxiety.

Another interpretation concerning the relationship between trait anxiety and imagery ability has to do with the effects of anxiety on cognitive performance. Hamilton (1979) has reviewed some literature on how anxiety can be detrimental to cognitive tasks such as vigilance performance. Possibly imagery ability could be included with such cognitive activity as described by Hamilton.

Hypothesis 3 found a significant positive correlation between stressful life events and seriousness of illness scores. This supports the findings of Garrity, Marx, and Somes (1978), Harris (1980), Holmes and Rahe (1967), and Wyler, Masuda, and Holmes (1978) that stressful life events are associated with seriousness of disease. The direction of the relationship indicated that individuals with high scores on one measure tended to score higher on the other measure.

For the purpose of discussion, a significant relationship was found between the measure of subjective stress and seriousness of illness. In fact, this relationship was significant beyond the .001 level. These findings are also in line with Harris' (1980) study that an individual's subjective

evaluation of stress can be an accurate indicator of disease formation.

Hypothesis 4 investigated the relationship between level of acculturation and self-concept. Although a very slight negative correlation was found (-.08), it was not significant. It has been shown in the literature that as acculturation increases in Hispanics, they will experience a greater amount of personal guilt and self-derogation (Ramirez, 1969). Stonequist (1937) long ago had also hypothesized that a "marginal" person's bicultural membership retards integration of ethnic and personal identity. Perhaps the stresses associated with higher acculturation levels has a detrimental effect on self-concept, making adjustment more difficult. It is difficult to make this generalization from this study due to the low negative correlation which was obtained.

One possible artifact in the sample that could have contributed to the lower level of self-concept was the nature of the Tennessee Self Concept Scale scores. In looking at the raw data, there was a somewhat restricted range of self-concept scores, the majority falling below the 50th percentile, indicating a lower than average self-concept for this particular sample of Mexican-American subjects.

Hypothesis 5 examined the relationship between acculturation level and state anxiety. The direction of the relationship was significant, indicating that higher

acculturation scores were accompanied by higher state anxiety
scores. A major point one must consider when dealing with
acculturation scores and anxiety level is a possible sex
difference. The sample in this study consisted of approx-
imately 60 per cent females whose state anxiety scores were
higher than those of the males.

For the sake of discussion, the following variables
related to sex are briefly mentioned. In a study by Go
(cited in Senour, 1977), she found that highly acculturated
Mexican-American women had experienced significantly higher
anxiety than highly acculturated Mexican-American men. The
more acculturated the women became, the greater the anxiety
they reported. This was not true for the men. Thus, ac-
culturation pressures are experienced differently by Mexican
males and females.

Similarly, Murillo (1971) believes in the existence of
a good deal of conflict regarding the Mexican-American
woman's role. He maintains that fewer women are accepting
the traditional role. Many are struggling for greater
equality and a greater range of personal and vocational
choice within both the dominant culture and Mexican-American
society. This would support Wallace's (1970) view that
"whenever an individual is put in a position where two in-
compatible roles must be played simultaneously, he [or she]
experiences stress, since he [or she] cannot succeed in
both" (p. 231).

Wallace (1962) also stated that cultural groups who have been placed in situations of partial acculturation seem prone to "a chronic anxiety and tension" (p.184). In Fabrega, Rubel, and Wallace's (1967) study of Mexican-American outpatients, women reported a greater number of psychiatric symptoms such as anxiety neuroses.

The higher state anxiety scores of the females in this study could also have been due to the timing of the administration of the test battery. The instruments were given approximately one month before the week of final examinations. Therefore, a possible sex difference could have interacted with some anxiety associated with the upcoming termination of the semester.

Hypothesis 6 examined the relationship between self-concept scores and trait anxiety. The high negative correlation found is in line with the research (Donovan et al., 1975; Lauer, 1973; Mukherjee, 1969; Thompson, 1972). Since measures of anxiety were used in the validation of the Tennessee Self Concept Scale, significant negative correlations would be expected.

Hypothesis 7 examined the relationship between scores on level of acculturation and stress scores. The significant positive correlation found is in line with hypotheses made by Ruiz, Padilla, and Alvarez (1978), Murphy (1965), and with empirical research by Ramirez (1969). The present study

further supports the increasing evidence indicating that
stress and acculturation seem to increase together.

Studies in the past utilizing acculturation measures
have mainly used instruments designed especially for a par-
ticular study (e.g., interviews, case histories, questionnaires)
instead of a standardized instrument such as Olmedo's et al.,
(1978) scale of acculturation. Thus, the results of the
present study may be more relevant to the Mexican-American
population due to a stronger measure which was standardized
on both Mexican-Americans and Anglo-Americans.

Hypothesis 8 investigated the relationship between
stress scores and state anxiety scores, which was not sig-
nificant. Although there was a significant positive
correlation between acculturation scores and state anxiety
scores in hypothesis 5, it seems that acculturation level
may have greater impact than external life events on state
anxiety. For example, Diaz-Guerrero (1973) states that the
values of Mexican-American and Anglo-American families dif-
fer. We may speculate that more acculturated Mexicans may
show continuously higher state anxiety since conflicting
values are constantly being tested and evaluated in every-
day interactions with the dominant society.

The basis for testing hypotheses 9 through 19 was using
life events (SRRS) as a predictor of seriousness of illness
(SIRS). Stressful life events alone accounted for 9 per cent
of the variance between the scores. When vividness of imagery

was added to the basic stress model, there was a signficant increase in the variance accounted for between the scores. The correlation between vividness of imagery and seriousness of illness indicated higher imagery vividness accompanied by lower illness scores, but the relationship was not significant, although the trend was present. It seems that imagery alone would not be a preferred means of researching the treatment of illness in the Hispanic population, but should be used in conjunction with other variables such as external life events.

When the trait anxiety measure was added to the basic stress model, predictive efficiency of illness scores was also increased by 5 per cent over the stressful life events alone. This lends support to the position of Lazarus (1966) that cognitive mediating variables are important in the process between stress and illness.

When the self-concept measure was added to the basic stress model, predictive efficiency of illness scores was also increased by 3 per cent over the stressful life events measure alone. Given a constant life events score, persons with higher self-concept scored significantly lower on seriousness of illness than individuals with low self-concept scores. This could be interpreted that self-concept is a significant variable in how well a person can cope with stressful life events and therefore how seriously that individual may become ill. Persons with higher self-concepts are less

likely to worry over life events and consequently less likely to experience autonomic reactions that may lead to illness.

When the acculturation measure was added to the basic stress model, predictive efficiency of illness scores was also increased by 4 per cent over the stressful life events measure alone. Given a constant life events score, individuals with a higher acculturation level scored significantly higher on seriousness of illness. If we look at the disease categories of the Seriousness of Illness Rating Scale, several of the terms may require a certain degree of sophistication regarding their meanings. One may wonder whether all subjects clearly understood all the categories. Thus, it is possible that Mexican-Americans who scored higher on level of acculturation could also have been more familiar with the disease categories than Mexican-Americans who are less acculturated. As researchers, we must look closer at the impact that the acculturation process may have on the health of the Mexican-American. These results support Wallace's (1962) view that "psychosomatic complaints... proliferate under the conditions produced by culture conflict and partial acculturation" (p. 184).

It is very interesting that the one item subjective stress question, when added to the basic stress model, increased the predictive efficiency of illness scores by 6 per cent over the stressful life events measure alone. In fact, the subjective evaluation of stress correlated almost as

highly with seriousness of illness (.27) as did the stress-
ful life events measure (.30). Both were significant at the
.0001 level. This can be interpreted that an individual's
subjective evaluation of stress is just as important as a
measure of life events. Could we predict illness potential
in Hispanics by just as well asking, "How much stress have
you experienced in the last year?" than by giving the 43
item Social Readjustment Rating Scale?

A vector discriminating sex was also added to the basic
stress model as a predictor of seriousness of illness. Sex
accounted for only a 1 per cent increase in predictive ef-
ficiency over stressful life events alone but was significant
and accounted for 10 per cent of the variance with females
scoring higher on seriousness of illness than male subjects.
One may speculate why Mexican-American women may score
higher on illness measures than men. Perhaps the following
study may shed some light on this sex difference.

Roskies, Lia Iida-Miranda, and Strobel (1977) studied
the relationship between number of life changes and number
of illnesses in Portuguese immigrants in Montreal, Canada.
Within the sample, women presented a higher risk for phys-
ical illness, with scores increasing with age. There was
also some evidence that this sex difference may have re-
sulted from a low number of complaints by the men rather
than from a high rate of pathology in the women. This find-
ing of a higher illness-report rate in women has been said

by Nathanson (1975) "one of the most consistent observations in health survey research" (p. 57). Possibly Mexican-American men are more hesitant than women in disclosing their illnesses. This attitude would be worthwhile at looking into further.

Another possible sex difference in the present study deals with the item "depression" in the Seriousness of Illness Rating Scale. In looking at the raw data, just under 50 per cent of the Mexican-American women checked this item compared to less than 5 per cent of the men. Interestingly, Diaz-Guerrero (1973) observed that in Mexico City, about 44 per cent of the Mexican women in a survey sample reported feelings of depression.

The final task of the present study dealt with finding the most efficient variable in predicting seriousness of illness. Three variables resulted in a high degree of predictive efficiency, and they were, in rank order: 1) stressful life events, 2) subjective stress, and 3) acculturation level. The addition of more variables did not contribute to significant increases in predictive efficiency.

The most efficient variable in predicting seriousness of illness was stressful life events (SRRS). In a similar study by Harris (1980) who predicted illness scores also using the Social Readjustment Rating Scale, he found that the best predictors in his study, in rank order, were: 1) trait anxiety, 2) sex, and 3) stressful life events.

Harris's sample consisted of predominantly Anglo-Americans. In the present study, it seems that stressful life events may play a more critical role in predicting illness in Hispanics. Perhaps Mexican-Americans are more sensitive to the external environment as compared to Anglo-Americans. There is some evidence to support this view. Ramirez and Castaneda (1974) suggested that Mexican-Americans have a more field dependent or field sensitive cognitive style. Some researchers report greater externality in "locus of control" in Hispanics, while others report either no difference or greater internality (Garza, 1977).

Garza (1977) has reviewed a possible source of inconsistency in the results on locus of control in Hispanics. He states that "a careful examination of the characteristics of the samples used suggests that most findings showing greater externality in Chicanos may be attributed to socioeconomic background and not to cultural differences" (p. 99). Since the present study did not take socioeconomic status (SES) into account, it is not clear whether Mexican-Americans of different SES would score significantly different on the Social Readjustment Rating Scale.

Besides the Social Readjustment Rating Scale, the cognitive mediating variables of subjective stress and level of acculturation were the next most efficient predictors of illness. We must consider not only external events but

cognitive variables in the evaluation process of stress on the Hispanic. This evaluation of life events as threatening or non-threatening seems to be important in predicting seriousness of illness. This point is well made in the Roskies et al., (1977) study on the relationship between stress and illness in Portuguese immigrants in Canada. The authors point out that:

> A crucial element in determining the stressfulness of change is neither the amount of adaptation required, but rather the specific meaning attributed to the change in terms of the person's life goals and values (Roskies et al., 1977, p. 6).

It would follow that one must consider the values and life styles of the Mexican-American culture as mediating variables between stress and illness. Thus, both internal and external variables should be considered in predicting seriousness of illness.

Implications

The results of this study relate to several areas of stress and illness. In a theoretical sense, support can be given to the cognitive mediation theory of stress (Lazarus, 1966). The model states that between the external event and the autonomic reactions that may lead to illness, cognitive variables mediate. The present study found significant correlations between seriousness of illness and such cognitive variables as trait anxiety, self-concept, acculturation level, and a subjective evaluation of stress. It seems that

in this Mexican-American sample, the variable of accultura-
tion mediates significantly between stress and illness.
Not only must one consider if Hispanic individuals are un-
der external stress, but we must look at the effects of
their degree of acculturation to the majority culture. Also,
do Hispanics see themselves as being under a great deal of
stress? Apparently, according to this study, we cannot
ignore the validity of using the Hispanic's own evaluation
of how much stress he or she is experiencing.

Since the present study has shown that subjective
stress has predictive efficiency, this has implications in
an area of psychological testing of Mexican-Americans.
Olmedo (1977) has stated that the "psychological testing of
Chicanos and other ethnic minorities has been a source of
controversy for over four decades" (p. 175). Taking this
controversy into consideration, why not also rely upon the
Hispanic client's own subjective evaluation of what is
stressful when the counselor is in doubt of the instruments
he or she is using for assessing Hispanic clients.

A major thrust of this study was to evaluate the role
of the acculturation process as a cognitive mediating var-
iable in the stress and disease process. The implications
of acculturation for determining how much stress a Hispanic
is experiencing also plays a role in the therapeutic process.
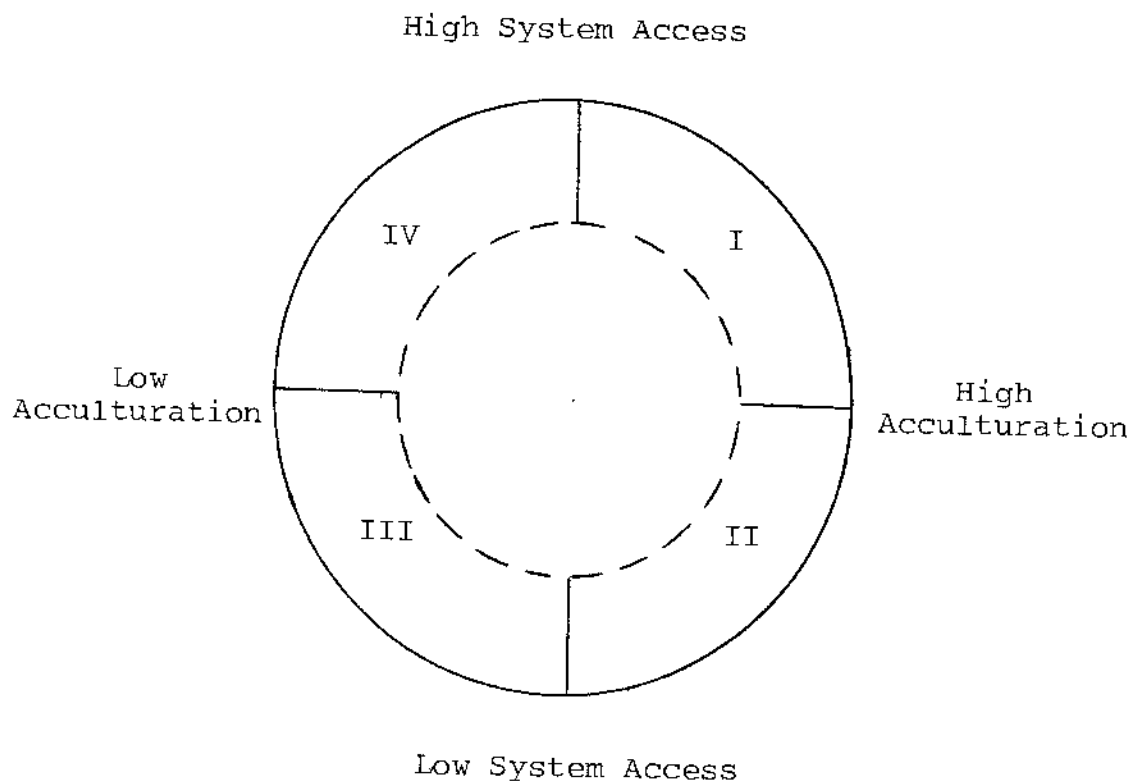As Levine and Padilla (1980) point out:

The marginal person may experience par-
ticular difficulties that lead him or
her to seek therapy. A person may see
the relative benefits of acculturating
to the values of the dominant group
while feeling pressure from family mem-
bers and friends to remain ethnically
"loyal." The degree to which the indi-
vidual should acculturate or should remain
a part of the minority group may be a major
question in therapy. Such problems of dual
cultural membership make therapy challeng-
ing. The therapist must integrate an under-
standing of the dual cultural experience
into the therapeutic process. At the same
time the therapist must allow for each
client's individual differences. The thera-
pist must determine with the individual how
much cultural separatism and/or accultura-
tion to the majority group will facilitate
personal growth (Levine & Padilla, 1980,
pp. 13-14).

Baron (1979), as stated earlier, has put together an ac-
culturation model called the "Acculturation/System Access
Circumplex" which attempts to synthesize some socio-psycho-
logical and political issues in relation to the Mexican-
American. A discussion of this model is necessary at this
point so we may see the therapeutic implications of the ac-
culturation process.

"System access" as used by Baron (1979) denotes socio-
political dynamics which includes such variables as categories
of abilities, personality dispositions, subjective culture,
social structure, etc. Depending upon the person's accultu-
rational/system access status, it is hypothesized that members
of an ethnic minority could be classified into one of four
quadrants (see Figure 1): (I) High acculturation/high system

Figure 1

ACCULTURATION/SYSTEM ACCESS CIRCUMPLEX *

High System Access

Low Acculturation

High Acculturation

Low System Access

* From Baron (1979)

access, (II) high acculturation/low system access, (III) low acculturation/low system access, and (IV) low acculturation/ high system access. The inner circle denotes the area which would represent such a balance. A discussion of each quadrant and therapeutic implications will briefly follow.

(I) <u>High Acculturation/High System Access</u> -

<u>The "Anglicized" Mexican-American</u>

The Mexican-American falling into this quadrant has lost most, if not all, of his/her cultural consciousness and

identification. Typically, the person will have little or no knowledge of (1) the Spanish language, (2) the history of his or her ancestry, (3) political happenings in the Chicano community, and (4) traditional folkways and life styles including music, food, clothing, etc. (Ruiz & Padilla, 1977).

Traditional mental health services would be appropriate, such as individual and group therapy based on cognitive/ emotive/humanistic rationales since there would be a congruence between therapist and client regarding goals and expectations.

(II) High Acculturation/Low System Access -

The "Upward Bound" Casualty

This quadrant represents the Mexican-American who has lower class standing but with more middle class acculturation. For example, children in this quadrant engage in compensatory curricula (e.g., special programs). Their parents may become anxious, ashamed, or resentful of their lack of education as their children participate in these activities. Consequently, the children experience a sense of alienation from their family and community (Ryan, 1971).

Mental health services for this group would include crisis intervention strategies, strong advocacy and referral procedures to deal with problems arising from such factors as inadequate housing, financial concerns, poor health standards, and legal issues.

Inner Circle - The Mexican-American College Student

This area may have particular relevance to the sample in the present study. The Mexican-Americans in the inner circle supposedly have a balanced acculturation/system access status. These persons are in a state of transition from high to low levels of acculturation and system access. From a mental health perspective, Baron (1979) describes the tensions in this sector in the following:

> This tension can translate itself into intra-psychic conflicts related to career decisions, value conflicts, social commitment, guilt over success and achievement in contrast to fellow minority group members and feelings of alienation as one drifts further from one's reference group toward another group which may not be accepting. This last conflict can be seen in students who no longer feel totally a part of their childhood peer group because of educational experiences but who are set apart from their Anglo academic counterparts due to ethnicity (Baron, 1979, p. 98).

Padilla (1975) and Ruiz and Padilla (1977) have presented case studies of Mexican-American college students illustrating the conflicts resulting from shifts in acculturation and peer group identification as a result of the university experience. These authors point to the importance of acculturation as one of "the variables of major significance in designing counseling programs for culturally different clients" (Ruiz & Padilla, 1977, p. 405). As Miranda and Castro (1977) state:

> The basis for the eventual success of the [counseling] treatment is perhaps greatest

in the initial phase since so much of it
is attributable to the skills of the
therapist. The therapist must accept
the responsibility for becoming suf-
ficiently acquainted with clients in
terms of personality, cultural back-
ground, and communication style, to
perceive them from a holistic point of
view....Accepting the premise that all
therapeutic relationships are an in-
tegrated part of the culture in which
they occur requires that attention be
directed toward understanding the sig-
nificant interrelationships between
cultural variables and the implemen-
tation of effective therapeutic
intervention (Miranda & Castro, 1977,
pp. 260-261).

Hardy and Cull (1973) have also commented that the suc-

cess of a client-counselor relationship depends greatly on

communication. Anglo counselors should be made more aware

of a sex role differentiation in the Chicano family and how

different a Chicano's perception of "father" may be from an

Anglo's.

Since the present study probably had a disproportionate

number of more highly acculturated subjects (e.g., college

students), the results have significance for Mexican-Ameri-

cans described in quadrant I (high acculturation/high system

access) in Baron's (1979) model. Baron had postulated that

individuals in quadrant I have stresses which occur primarily

from intrapsychic and less from extrapsychic sources. On

the contrary, the present study found that the external life

events measure (SRRS) significantly related to stress in

Hispanics. With regard to disease processes in particular,

we need to take a closer look at how external stressors play a role in the health of the Mexican-American.

It has been said that Chicanos have a tendency toward introversion, and self-belittlement, and consequently inhibit their expression of feelings (Diaz-Guerrero, 1975). In the present study, low self-concept was accompanied by high scores on anxiety level. Perhaps when we use counseling interventions with Mexican-Americans, we must focus on helping Chicanos learn more appropriate ways of emotional expression since, as Stoker and Meadow (1974) point out, Mexican-American women report a greater incidence of holding in feelings and therefore suffer more from depression. On the other hand Chicano men seem to exhibit more aggression than Mexican-American women (Stoker & Meadow, 1974). These differences in emotional expression and self-concept may be due to the changing roles of Mexican-Americans intertwined with the effects of acculturation.

When we look at the correlations between level of acculturation, stress, anxiety, and illness, we find that the scores of these variables all increase together. Some readers may infer that the effects of the acculturation process may be totally negative. This is not necessarily so. We must keep the statistics used in perspective. There may be a point at which the acculturation process has beneficial effects (Murphy, 1965), but the use of correlational procedures may not show this. Since the present study may have

dealt with more highly acculturated subjects, the correlational procedures used may not have been able to find that acculturation point where stress or anxiety would increase or decrease. More sophisticated statistical procedures are needed to determine how much acculturation would begin to produce conflict in Chicanos.

When dealing with conflict in Mexican-Americans, we must look at family and individual dynamics in relation to disease processes. As Panceri et al., (1976) showed, dermopaths seem to be characterized by less-developed defense mechanisms than cardiopaths. Minuchin (1967) has also stated that "psychosomatic families" are usually overinvolved or enmeshed. Diaz-Guerrero (1977) has similarly stated that many families of Chicano adolescents are less acceptant of their children and consequently show less autonomy. These children are more susceptible to higher anxiety and possibly to greater illness potential. In regard to counseling intervention, we must look at the conditions which may produce psychosomatic symptoms in Chicano families and perhaps focus on a gradual way of producing a more "disengaged" Chicano family system. If the therapist attempts to "separate" the individual from an overinvolved family, a Chicano family's system may be disrupted too soon and consequently the family may drop out of therapy prematurely.

In the same vein, conflicts due to pressures within a family not to acculturate to the dominant society's values may also contribute to heightened stress leading to illness potential. Family members could gain more awareness of their degree of acculturation through the aid of a therapist. By doing this, as Levine and Padilla (1980) state, the family as a whole can determine just how much cultural separatism would promote personal growth.

Finally, the present study could be incorporated into the model of Kagan and Levi (1974) to predict illness using stress and mediating variables. By using a patient's disease history, genetic factors, measures of stress, personality factors, one could use multiple linear regression to determine the per cent of variance each variable would contribute. This is exactly what Harris (1980) proposed in the following:

> Individuals could be informed of the likelihood of avoiding disease and remaining healthy if certain variables would be changed. For example, the regression formula could be used to predict the increased or decreased likelihood of becoming ill if certain variables could be changed such as stopping smoking, beginning exercise, learning to relax and learning cognitive management to reduce subjective evaluation of stress. The probabilities of avoiding specific illnesses could be investigated, and the healthy management of high stress work situations would be possible given the significant mediating variables (Harris, 1980, p. 134).

This approach of using multiple linear regression is just one such method advocated by Bartlett and O'Leary (1969), Cleary et al., (1975), Einhorn and Bass (1971), and Jones (1973) as a means in cross-cultural research. One of the main intents of this study was to stimulate further research in the cross-cultural area, especially in the are of acculturation, where more in-depth examination is warranted.

Recommendations

On the basis of the results of the present study, the following recommendations have been formulated:

1. A similar investigation should be conducted using a different measure of illness (e.g., medical history, number of days ill, or physicians evaluation of illness severity).

2. A similar research study should be conducted using a different measure of stress which takes into consideration the degree of impact of individual life events instead of a global measure of stress as does the Social Readjustment Rating Scale.

3. A new research study should be conducted with instruments that have been used more extensively with Mexican-Americans.

4. A similar investigation should be conducted using other variables in the Mexican-American culture as possible predictors of illness (e.g., degree of family involvement or enmeshment, reliance on folk healers or remedies, number

of generations in the United States, or degree of familiarity with health services in poorer Chicano areas).

5. A new research study should be conducted in which subjects being tested have had exposure to comparable levels of acculturation.

6. A similar research study should be conducted to determine whether varying levels of acculturation are correlated with familiarity of disease terminology on the Seriousness of Illness Rating Scale.

7. A new research study should be done investigating the effectiveness of imagery on various disease processes or on one particular disease such as cancer in the Chicano.

8. A similar research study should be conducted which controls for socioeconomic level, as this variable may contain elements perceived by Mexican-Americans as differentially effecting stress measures.

9. A new investigation should be conducted, if college students are used, in which the test battery is not given at a point which may affect state anxiety scores.

10. A similar study should be conducted comparing the effects of different stress management techniques on highly anxious and/or disease prone Mexican-Americans.

11. A new research study should be conducted in studying the personality characteristics of Mexican-Americans who tend to have one particular type of disease, such as a psychosomatic illness.

12. Mental health centers who counsel primarily Mexican-Americans should be made more aware of the impact of the acculturation process on their clients and use an objective measure of acculturation as one basis to desing their treatment programs.

13. A similar research study should be conducted using different measures of self-concept and imagery.

14. A new research study should be conducted investigating sex differences in the Hispanic culture as they relate to the manifestation of disease entities and "psychoneurotic" symptoms, such as depression.

15. More objective instruments should be devised to assess the effectiveness of counseling strategies with the Mexican-American population.

16. Agencies who do extensive psychological testing of Mexican-Americans should use appropriate instruments that take acculturation variables into consideration, such as the SOMPA (Mercer, 1973).

17. More research should be done investigating Chicano family dynamics, especially with regard to the production of psychosomatic symptoms and as they relate to pressures resulting from the acculturation process.

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Appendix A

Directions To Instructors and Subjects

The following tests will be given in random order (except for #5, to be given last) to your classes:

1. the scale of acculturation
2. the State-Trait Anxiety Inventory
3. the Social Readjustment Rating Scale
4. the Tennessee Self Concept Scale
5. the Seriousness of Illness Rating Scale
6. the subjective feeling of stress question

Specific instructions for each test are printed in each test manual or on the test itself. The researcher will go over each test with the instructor before the administration of each instrument.

No information concerning the nature of the investigation will be given to the students. At the beginning of the testing sessions, the students will be read the following statement:

"We would like you to participate in a research project which will require filling out several questionnaires during this class period. The study will be kept strictly confidential. You do not need to write your name on the questionnaires. Your social security number will be sufficient in order to maintain confidentiality. After the questionnaires have been filled out, the purpose of the research will be explained to you. Thank you for your cooperation."

Appendix B

THE BETTS QMI VIVIDNESS OF IMAGERY SCALE

Name or SSN _____ ___

Instructions for doing test:

The aim of this test is to determine the vividness of your imagery. The items of the test will bring certain images to your mind. Your are to rate the vividness of each image by reference to the accompanying rating scale, which is shown at the bottom of the page. For example, if your image is "vague and dim" you give it a rating of 5. Record your answer in the brackets provided after each item. Just write the appropriate number after each item. Before you turn to the items on the next page, familiarize yourself with the different categories on the rating scale. Throughout the test, refer to the rating scale when judging the vividness of each image. A copy of the rating scale will be printed on each page. Please do not turn to the next page until you have completed the items on the page you are doing, and do not turn back to check on other items you have done. Complete each page before moving on to the next page. Try to do each item separately independent of how you may have done other items.

The image aroused by an item of this test may be:

Perfectly clear and as vivid as the actual experience	1
Very clear and comparable in vividness to the actual experience	2
Moderately clear and vivid	3
Not clear or vivid, but recognizable	4
Vague and dim	5
So vague and dim as to be hardly discernible	6
No image present at all, you only 'knowing' that you are thinking of the object	7

An example of an item on the test would be one which asked you to consider an image which comes to your mind's eye of a red apple. If your visual image was moderately clear and vivid you would check the rating scale and mark '3' in the brackets as follows:

Item   Rating

5. A red apple   (3)

   Now turn to the next page when you have understood these instructions and begin the test.

-2-

Think of some relative or friend whom you frequently see, considering carefully the picture that rises before your mind's eye. Classify the images suggested by each of the following questions as indicated by the degrees of clearness and vividness specified on the Rating Scale.

Item   Rating

1. The exact contour of face, head, shoulders,
    and body   ( )

2. Characteristic poses of head, attitudes of
    body, etc.   ( )

3. The precise carriage, length of step, etc.   ( )

4. The different colors worn in some familiar
    costume   ( )

Think of seeing the following, considering carefully the picture which comes before your mind's eye; and classify the image suggested by the following question as indicated by the degree of clearness and vividness specified on the Rating Scale.

5. The sun as it is sinking below the horizon   ( )

Rating Scale

Perfectly clear and as vivid as the actual experience	1
Very clear and comparable in vividness to the actual experience	2
Moderately clear and vivid	3
Not clear or vivid, but recognizable	4
Vague and dim	5
So vague and dim as to be hardly discernible	6
No image present at all, you only 'knowing' that you are thinking of the object	7

-3-

Think of each of the following sounds, considering carefully the image which comes to your mind's ear, and classify the images suggested by each of the following questions as indicated by the degrees of clearness and vividness specified on the Rating Scale.

Item	Rating
6. The whistle of a locomotive	( )
7. The honk of an automobile	( )
8. The mewing of a cat	( )
9. The sound of escaping steam	( )
10. The clapping of hands in applause	( )

Rating Scale

Perfectly clear and as vivid as the actual experience	1
Very clear and comparable in vividness to the actual experience	2
Moderately clear and vivid	3
Not clear or vivid, but recognizable	4
Vague and dim	5
So vague and dim as to be hardly discernible	6
No image present at all, you only 'knowing' that you are thinking of the object	

-4-

Think of "feeling" or touching each of the following, considering carefully the image which comes to your mind's touch, and classify the images suggested by each of the following questions as indicated by the degrees of clearness and vividness specified on the rating scale.

Item	Rating
11. Sand	( )
12. Linen	( )
13. Fur	( )
14. The prick of a pin	( )
15. The warmth of a tepid bath	( )

Rating Scale

Perfectly clear and vivid as the actual experience	1
Very clear and comparable in vividness to the actual experience	2
Moderately clear and vivid	3
Not clear or vivid, but recognizable	4
Vague and dim	5
So vague and dim as to be hardly discernible	6
No image present at all, you only 'knowing' that you are thinking of the object	7

-5-

Think of performing each of the following acts, considering carefully the image which comes to your mind's arms, legs, lips, etc., and classify the images suggested as indicated by the degree of clearness and vividness specified on the Rating Scale.

Item	Rating
16. Running upstairs	( )
17. Springing across a gutter	( )
18. Drawing a circle on paper	( )
19. Reaching up to a high shelf	( )
20. Kicking something out of your way	( )

Rating Scale

Perfectly clear and as vivid as the actual experience	1
Very clear and comparable in vividness to the actual experience	2
Moderately clear and vivid	3
Not clear or vivid, but recognizable	4
Vague and dim	5
So vague and dim as to be hardly discernible	6
No image present at all, you only 'knowing' that you are thinking of the object	7

Think of tasting each of the following considering carefully the image which comes to your mind's mouth, and classify the images suggested by each of the following questions as indicated by the degrees of clearness and vividness specified on the Rating Scale.

Item	Rating
21. Salt	( )
22. Granulated (white) sugar	( )
23. Oranges	( )
24. Jelly	( )
25. Your favorite soup	( )

Rating Scale

Perfectly clear and as vivid as the actual experience	1
Very clear and comparable in vividness to the actual experience	2
Moderately clear and vivid	3
Not clear or vivid, but recognizable	4
Vague and dim	5
So vague and dim as to be hardly discernible	6
No image present at all, you only 'knowing' that you are thinking of the object	7

Think of smelling each of the following, considering care-
fully the image which comes to your mind's nose and clas-
sify the images suggested by each of the following ques-
tions as indicated by the degrees of clearness and vividness
specified on the Rating Scale.

Item   Rating

26. An ill-ventilated room   ( )

27. Cooking cabbage   ( )

28. Roast beef   ( )

29. Fresh paint   ( )

30. New leather   ( )

Rating Scale

Perfectly clear and as vivid as the actual experience   1

Very clear and comparable in vividness to the actual
    experience   2

Moderately clear and vivid   3

Not clear or vivid, but recognizable   4

Vague and dim   5

So vague and dim as to be hardly discernible   6

No image present at all, you only 'knowing' that you
    are thinking of the object   7

Think of each of the following sensations, considering carefully the image which comes before your mind, and classify the images suggested as indicated by the degrees of clearness and vividness specified on the Rating Scale.

Item		Rating
31.	Fatigue	( )
32.	Hunger	( )
33.	A sore throat	( )
34.	Drowsiness	( )
35.	Repletion as from a very full meal	( )

Rating Scale

Perfectly clear and as vivid as the actual experience	1
Very clear and comparable in vividness to the actual experience	2
Moderately clear and vivid	3
Not clear or vivid, but recognizable	4
Vague and dim	5
So vague and dim as to be hardly discernible	6
No image present at all, you only 'knowing' that you are thinking of the object	7

Appendix C

A Scale of Acculturation

THE PURPOSE OF THIS STUDY IS TO MEASURE THE MEANING THAT
CERTAIN CONCEPTS HAVE FOR DIFFERENT PEOPLE. ON THE FOL-
LOWING PAGES YOU WILL FIND A CONCEPT PRINTED ON TOP OF EACH
PAGE. BELOW THAT CONCEPT THERE IS A SET OF SCALES. YOU
ARE ASKED TO RATE EACH CONCEPT IN RELATION TO THOSE SCALES.

HERE IS HOW TO USE THESE SCALES:

IF YOU FEEL THAT THE CONCEPT AT THE TOP OF THE PAGE IS
VERY CLOSELY RELATED TO ONE OR THE OTHER END OF THE SCALE,
PLACE A CHECK MARK AS FOLLOWS:

FAIR ✓ ____ ____ ____ ____ ____ UNFAIR

OR

FAIR ____ ____ ____ ____ ____ ✓ UNFAIR

IF YOU FEEL THAT THE CONCEPT IS QUITE CLOSELY RELA-
TED TO ONE OR THE OTHER END OF THE SCALE, PLACE YOUR MARK
AS FOLLOWS:

FAIR ____ ____ ____ ____ ✓ ____ UNFAIR

OR

FAIR ____ ✓ ____ ____ ____ ____ UNFAIR

IF THE CONCEPT SEEMS ONLY SLIGHTLY RELATED TO ONE
END SIDE AS OPPOSED TO THE OTHER SIDE, PLACE YOUR CHECK
MARK AS FOLLOWS:

FAIR ____ ____ ✓ ____ ____ ____ UNFAIR

OR

FAIR ____ ____ ____ ✓ ____ ____ UNFAIR

IF YOU CONSIDER THE CONCEPT NEUTRAL ON THE SCALE,
PLACE YOUR CHECK MARK IN THE MIDDLE SPACE:

FAIR ____ ____ ____ ✓ ____ ____ ____ UNFAIR

I - IT IS VERY IMPORTANT THAT YOU PLACE YOUR CHECK MARK
    ON TOP OF THE LINE THAT DESIGNATES YOUR CHOSEN POSITION

2 - DO NOT PUT MORE THAN ONE CHECK MARK ON A SINGLE SCALE

3 - PLEASE COMPLETE PERSONAL BACKGROUND INFORMATION

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-2-

MOTHER

SERIOUS   ___ ___ ___ ___ ___ ___ ___   HUMOROUS

ROUGH   ___ ___ ___ ___ ___ ___ ___   SMOOTH

UGLY   ___ ___ ___ ___ ___ ___ ___   BEAUTIFUL

DELICATE   ___ ___ ___ ___ ___ ___ ___   RUGGED

SAFE   ___ ___ ___ ___ ___ ___ ___   DANGEROUS

COMMONPLACE   ___ ___ ___ ___ ___ ___ ___   UNIQUE

SIMPLE   ___ ___ ___ ___ ___ ___ ___   COMPLEX

-3-

FATHER

SERIOUS   ___ ___ ___ ___ ___ ___ ___   HUMOROUS

ROUGH   ___ ___ ___ ___ ___ ___ ___   SMOOTH

UGLY   ___ ___ ___ ___ ___ ___ ___   BEAUTIFUL

DELICATE   ___ ___ ___ ___ ___ ___ ___   RUGGED

SAFE   ___ ___ ___ ___ ___ ___ ___   DANGEROUS

COMMONPLACE   ___ ___ ___ ___ ___ ___ ___   UNIQUE

SIMPLE   ___ ___ ___ ___ ___ ___ ___   COMPLEX

-4-

MALE

SERIOUS ___ ___ ___ ___ ___ ___ ___ HUMOROUS

ROUGH ___ ___ ___ ___ ___ ___ ___ SMOOTH

UGLY ___ ___ ___ ___ ___ ___ ___ BEAUTIFUL

DELICATE ___ ___ ___ ___ ___ ___ ___ RUGGED

SAFE ___ ___ ___ ___ ___ ___ ___ DANGEROUS

COMMONPLACE ___ ___ ___ ___ ___ ___ ___ UNIQUE

SIMPLE ___ ___ ___ ___ ___ ___ ___ COMPLEX

-5-

Personal Background Information

Please answer with a ____ mark whenever possible, in the spaces provided for. Try not to skip any items and answer as accurately as you can.

1. Sex M ____   F ____

2. What is your ethnic background? (Check one)

    ____ 1. Chicano/Mexican-American

    ____ 2. Anglo

    ____ 3. Black

    ____ 4. Asian

    ____ 5. Other

3. Year of birth: ____

4. Where were you born? (Check one)

    ____ 1. U.S.

    ____ 2. Mexico

    ____ 3. Other

5. Who lives at home? (You may check more than one)

    ____ 1-3 brothers

    ____ 4-6 brothers

    ____ More than 6 brothers

    ____ 1-3 sisters

    ____ 4-6 sisters

    ____ More than 6 sisters

6. What language do you speak at home?   (Check one)

_____ 1. Spanish only

_____ 2. Mostly Spanish

_____ 3. Mostly English

_____ 4. English only

_____ 5. Other

7. What kind of job does the head of the household have? (Check one)

_____ 1. Blue collar

_____ 2. White collar

_____ 3. Other

8. What is the citizenship of the head of your household? (Check one)

_____ 1. U.S.

_____ 2. Mexican

_____ 3. Other

9. Where did the head of your household grow up? (Check one)

_____ 1. Farm

_____ 2. City

10. How many years of education does the head of your household have?   (Check one)

_____ 1. 0-8 Years

_____ 2. 9 or more years

Appendix D

Social Readjustment Rating Scale

Under "Number of Occurrences" indicate how many times in the past year each of the events has occurred.

Life Event	Number of Occurrences	Scale Value	Your Score
Death of spouse	____	100	____
Divorce	____	73	____
Marital separation from mate	____	65	____
Detention in jail or other institution	____	63	____
Death of a close family member	____	63	____
Major personal injury or illness	____	53	____
Marriage	____	50	____
Being fired at work	____	47	____
Marital reconciliation with mate	____	45	____
Retirement from work	____	45	____
Major change in the health or behavior of a family member	____	44	____
Pregnancy	____	40	____
Sexual difficulties	____	39	____
Gaining a new family member (eg., through birth, adoption, etc.	____	39	____
Major business readjustment (eg., merger, reorganization, bankruptcy, etc.)	____	39	____
Major change in financial state (eg., a lot worse or a lot better off than usual)	____	38	____

Life Event	Number of Occurrences	Scale Value	Your Score
Death of a close friend	_____	37	_____
Changing to a different line of work	_____	36	_____
Major change in the number of arguments with spouse (eg., either a lot more or a lot less than usual regarding child-rearing, personal habits, etc.)	_____	35	_____
Taking on a mortgage greater than $10,000 (eg., purchasing a home, business, etc.)	_____	31	_____
Foreclosure on a mortgage or loan	_____	30	_____
Major change in responsibilities at work (eg., promotion, demotion, lateral transfer)	_____	29	_____
Son or daughter leaving home (eg., marriage, attending college, etc.)	_____	29	_____
In-law troubles	_____	29	_____
Outstanding personal achievement	_____	28	_____
Wife beginning or ceasing work outside the home	_____	26	_____
Beginning or ceasing formal schooling	_____	26	_____
Major change in living conditions (eg., building a new home, remodeling, deterioration of home or neighborhood, etc.)	_____	25	_____
Revision of personal habits (dress, manners, associations)	_____	24	_____
Troubles with the boss	_____	23	_____

Life Event	Number of Occurrences	Scale Value	Your Score
Major change in working hours or conditions	_____	20	_____
Change in residence	_____	20	_____
Changing to a new school	_____	20	_____
Major change in usual type and/or amount of recreation	_____	19	_____
Major change in church activities (eg., a lot more or a lot less than usual)	_____	19	_____
Major change in social activities (eg., clubs, dancing, movies)	_____	18	_____
Taking on a mortgage or loan less than $10,000 (eg., purchasing a car, TV, freezer, etc.)	_____	17	_____
Major change in sleeping habits (eg., a lot more or a lot less sleep, or change in part of day when asleep)	_____	16	_____
Major change in number of family get-togethers (eg., a lot more or a lot less than usual)	_____	15	_____
Major change in eating habits (a lot more or a lot less food intake, or very different meal hours or surroundings)	_____	15	_____
Vacation	_____	13	_____
Christmas	_____	12	_____
Minor violations of the law	_____	11	_____

Appendix E

Subjective Feeling of Stress

Name or SSN _____

Please answer the following by circling the appropriate number.

How much stress have you experienced during the past twelve months?

Very little			Moderate		Great deal	
1	2	3	4	5	6	7

Appendix F

Seriousness of Illness Rating Scale

Name or SSN _____

Please read the following list of illnesses and circle the number of any illness or problem that you have experienced in the past twelve months only. Circle only those problems you have experienced. Accuracy is very important; carefully circle the appropriate number.

1.	Dandruff	33.	Bed sores
2.	Warts	34.	Increased menstural flow
3.	Cold sore, canker sore	35.	Fainting
4.	Corns	36.	Measles
5.	Hiccups	37.	Painful menstruation
6.	Bad breath	38.	Infection of middle ear
7.	Sty	39.	Varicose veins
8.	Common cold	40.	Psoriasis
9.	Farsightedness	41.	No menstrual periods
10.	Nosebleed	42.	Hemorrhoids
11.	Sore throat	43.	Hay fever
12.	Nearsightedness	44.	Low blood pressure
13.	Sunburn	45.	Eczema
14.	Constipation	46.	Drug allergy
15.	Astigmatism	47.	Bronchitis
16.	Laryngitis	48.	Hyperventilation
17.	Ringworms	49.	Shingles
18.	Headache	50.	Mononucleosis
19.	Scabies	51.	Infected eye
20.	Boils	52.	Bursitis
21.	Heartburn	53.	Whooping cough
22.	Acne	54.	Lumbago
23.	Abscessed tooth	55.	Fibroids of the uterus
24.	Colorblindness	56.	Migraine
25.	Tonsillitis	57.	Hernia
26.	Diarrhea	58.	Frostbite
27.	Carbuncle	59.	Goiter
28.	Chickenpox	60.	Abortion
29.	Menopause	61.	Ovarian cyst
30.	Mumps	62.	Heatstroke
31.	Dizziness	63.	Gonorrhea
32.	Sinus infection	64.	Irregular heart beats

Seriousness of Illness Rating Scale - Page 2

65. Overweight
66. Anemia
67. Anxiety reaction
68. Gout
69. Snake bite
70. Appendicitis
71. Pneumonia
72. Depression
73. Frigidity
74. Burns
75. Kidney infection
76. Inability for sexual
    intercourse
77. Hyperthyroid
78. Asthma
79. Glaucoma
80. Sexual deviation
81. Gallstones
82. Arthritis
83. Starvation
84. Syphilis
85. Accidental poisoning
86. Slipped disk
87. Hepatitis
88. Kidney stones
89. Peptic ulcer
90. Pancreatitis
91. High blood pressure
92. Small pox
93. Deafness
94. Collapsed lung
95. Shark bite

96. Epilepsy
97. Chest pain
98. Nervous breakdown
99. Diabetes
100. Blood clot in blood
     vessels
101. Hardening of the arteries
102. Emphysema
103. Tuberculosis
104. Alcoholism
105. Drug addiction
106. Coma
107. Cirrhosis of the liver
108. Parkinson's disease
109. Blindness
110. Mental retardation
111. Blood clot in the lungs
112. Manic depressive psychosis
113. Stroke
114. Schizophrenia
115. Muscular dystrophy
116. Congenital heart defects
117. Tumor in the spinal cord
118. Cerebral palsy
119. Heart failure
120. Heart attack
121. Brain infection
122. Multiple sclerosis
123. Bleeding of the brain
124. Uremia
125. Cancer
126. Leukemia

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