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AN INVESTIGATION OF BIOLOGICAL, PSYCHOSOCIAL
AND SOCIOCULTURAL INFLUENCES UPON THE
BLOOD PRESSURES OF ADOLESCENTS
IN CORPUS CHRISTI, TEXAS

By
Timothy Ready

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ABSTRACT

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The influence on blood pressure of psychosocial stress associated with difficult social circumstances has long been debated by social and biological scientists. The possible influence of stress on blood pressure for groups with high rates of hypertension such as Black Americans is still a matter of controversy. If psychosocial stress associated with a high rate of poverty and a history of racial discrimination is important in the etiology of hypertension for Black Americans, then it would be expected that high blood pressure might also be more common in other populations that have been subjected to similar difficulties. Such a population exists in the Mexican-Americans of South Texas.

Recent studies have found that the prevalence of hypertension among Mexican-American adults in two cities--Laredo, Texas and Sacramento, California--is higher than that of Anglo-Americans. Although hypertension is not common during childhood or adolescence, evidence suggests that the tendency toward high blood pressure may become established during youth. In order to understand the

origins of hypertension, it is therefore useful to examine factors related to blood pressure early in life.

In this study of 899 high school students in Corpus Christi, Texas, it was found that the blood pressures of Mexican-American youths were significantly higher than those of Anglos. In addition, responses to survey items indicate that the psychosocial adaptation of Mexican-Americans to various social environments such as the school, peers, and extracurricular activities is likely to be more problematic than that of Anglo-American youths. Data derived from interviews, ethnohistorical and ethnographic research are presented in support of this finding.

Only a slight tendency for measures of problematic psychosocial adaptation to be statistically related to high blood pressure was detected. For youths with rapid pulses, however, the tendency was more pronounced. The heaviness of body build exerted a far greater influence over blood pressure than measures of psychosocial adaptation. After statistically controlling for the heaviness of body build, Mexican-American youths continued to have higher blood pressures than Anglos. The necessity of simultaneously examining the relevance for blood pressure of the biological, psychosocial and sociocultural dimensions of human adaptation is emphasized.

To my parents,
Francis and Lillian Ready

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TABLE OF CONTENTS

Chapter		
I.	INTRODUCTION	1
II.	LITERATURE REVIEW	34
III.	METHODOLOGY	81
IV.	ETHNICITY, BLOOD PRESSURE AND PSYCHOSOCIAL ADAPTATION	120
V.	THE HISTORICAL, ECONOMIC AND POLITICAL CONTEXT OF INTERETHNIC RELATIONS	145
VI.	BEING A TEENAGER IN CORPUS CHRISTI	172
VII.	INFLUENCES UPON BLOOD PRESSURE	242
VIII.	SUMMARY AND CONCLUSIONS	304
		
APPENDIX 1.	FORMS AND QUESTIONNAIRES USED IN THIS STUDY	320
APPENDIX 2.	PRE-TEST OF THE DISTRIBUTION OF BLOOD PRESSURES AMONG CORPUS CHRISTI ADOLESCENTS, MAY 1977	338
APPENDIX 3.	BLOOD PRESSURE MEASUREMENT	347
APPENDIX 4.	MEAN RESPONSES OF ETHNIC AND LANGUAGE GROUPS TO THE PSYCHOSOCIAL ADAPTATION INSTRUMENT (PSAI)	354
BIBLIOGRAPHY		377

LIST OF TABLES

1.	Ethnic Breakdown of Participants in This Study . .	83
2.	Ethnic Breakdown of the Population of Nueces County, Ages Five to Nine in 1970, Extrap- olated to 1978, Ages Thirteen to Seventeen-- by Percentage	84
3.	Highest Level of Schooling Completed by Parents of Students Participating in This Study	86
4.	Median Number of Years of Schooling for Persons Twenty-Five Years and Older in Nueces County	87
5.	Level of Parental Education within Analytical Categories	97
6.	Parental Occupation within Analytical Categories	97
7.	Distribution of Systolic Blood Pressures by Ethnic Groups	120
8.	Mean Systolic Blood Pressure by Sex	123
9.	Mean Systolic Blood Pressure by Sex within Ethnic Groups	123
10.	Distribution of Males and Females within Ethnic Groups	124
11.	Blood Pressure and Language Used by Mexican-Americans	128
12.	Ethnic Representation in High Blood Pressure and Control Groups	130
13.	Correlation Matrix of Psychosocial Factors	134
14.	Ethnic Difference in Scores for Factor 1	137
15.	Language Difference in Scores for Factor 1	137
16.	Ethnic Difference in Scores for Factor 2	138
17.	Ethnic Difference in Scores for Factor 6	139
18.	Ethnic Difference in Scores for Factor 7	140
19.	Ethnic Difference in Scores for Factor 9	142
20.	Language Difference in Scores for Factor 9	142
21.	Ethnic Difference in Scores for Factor 10	143
22.	Ethnic Composition of Nueces County: 1930	154
23.	Families Below the Poverty Guideline	164
24.	Occupational Goal	175
25.	Usual Grades in School	176
26.	Pearson Product-Moment Correlation: Systolic Pressure with BMI (Subpopulations)	270
27.	Breakdown: Body Mass Index by Ethnicity	271

28.	Breakdown: Mean BMI with Sex	272
29.	Comparison of Mean BMI Between Ethnic Groups: Males	272
30.	Comparison of Mean BMI Between Ethnic Groups: Females	276
31.	Correlation of Triceps Skinfold to Systolic Pressure by Sex and Ethnicity	280
32.	The Consumption of Soda Pop by Obese and Nonobese	281
33.	The Consumption of Fruit, Vegetables and Fruit Juices by Obese and Nonobese	282
34.	Mean Systolic Pressure with Family History of Hypertension: Total Population	284
35.	Mean Systolic Pressure with Family History of Hypertension: Mexican-Americans	285
36.	Mean Systolic Pressure with Family History of Hypertension: Anglos	285
37.	BMI with Family History of Hypertension: Total Population	286
38.	BMI with Family History of Hypertension: Mexican-Americans	286
39.	BMI with Family History of Hypertension: Anglos	287
40.	Mean Systolic Pressure with Family History of Heart Attack or Stroke: Total Population	288
41.	Mean Systolic Pressure with Family History of Heart Attack or Stroke: Mexican-American	288
42.	Mean Systolic Pressure with Family History of Heart Attack or Stroke: Anglo	288
43.	Geographic Mobility with Mean Systolic Blood Pressure	289
44.	Geographic Mobility and Mean Systolic Pressure: Mexican-Americans	290
45.	Geographic Mobility and Mean Systolic Pressure: Anglos	290
46.	Geographic Mobility and BMI	291
47.	Means and Standard Deviations of Independent Variables in Multiple Regression	296
48.	Summary of Multiple Regression Findings	300
49.	Sex and Blood Pressure (Pre-Test)	343
50.	Age and Blood Pressure (Pre-Test)	343
51.	Geographic Mobility and Blood Pressure (Pre-Test)	343
52.	Academic Performance and Blood Pressure (Pre-Test)	344
53.	Family Structure and Blood Pressure (Pre-Test)	344
54.	Occupational Status and Blood Pressure (Pre-Test)	344
55.	Parental Education and Blood Pressure (Pre-Test)	345
56.	Family History of Hypertension and Blood Pressure (Pre-Test)	345

57

58

59

60

61

62

63

64

57.	Foreign-Born Parent and Blood Pressure (Pre-Test)	345
58.	Body Mass Index (BMI) and Ethnicity (Pre-Test)	346
59.	Body Mass Index and Sex (Pre-Test)	346
60.	Predicted Systolic Pressures on an Oversized Cuff Based on Measurements with a Standard Sized Cuff for Subjects with Large Arms . . .	349
61.	Sex and Blood Pressure: Standard and Oversized Cuff	350
62.	Ethnicity and Blood Pressure: Standard and Oversized Cuffs	351
63.	Geographic Mobility and Blood Pressure: Standard and Oversized Cuffs	351
64.	Family History of Hypertension and Blood Pressure: Standard and Oversized Cuffs	352

LIST OF FIGURES

1.	Distribution of Systolic Blood Pressures by Ethnic Group	122
2.	Distribution of Systolic Blood Pressures: Males	126
3.	Distribution of Systolic Blood Pressures: Females	127
4.	Comparison of the Heaviness of Body Build, Mexican-American and Anglo: Both Sexes	273
5.	Comparison of the Heaviness of Body Build of Mexican-American and Anglo Males	274
6.	Comparison of the Heaviness of Body Build of Mexican-American and Anglo Females	275
7.	Percentage of Obese Adolescents by Ethnicity and Sex	277
8.	Comparison of Skinfold Thickness: Mexican- American and Anglo Males	278
9.	Comparison of Skinfold Thickness: Mexican- American and Anglo Females	279

CHAPTER I

INTRODUCTION

Diseases of the cardiovascular system are, by far, the leading cause of death in the United States and most developed nations (Saunders 1977; National Center for Health Statistics 1975). It is recognized that these diseases, including coronary artery and cerebrovascular diseases, begin to develop years before the actual onset of the acute illness episode (Wissler 1973; Blumenthal and Jesse 1973). It is clear that these diseases have very complex etiologies and, perhaps even more than most diseases, are influenced by the manner in which the organism relates to the environment (Rosenman and Friedman 1974). High blood pressure (also called hypertension) is one of the characteristics, known as cardiovascular risk factors, which have been shown to increase the probability of being afflicted by a heart attack or stroke. This study is an investigation of the determinants of high blood pressure with special emphasis upon the impact of social and cultural factors.

Partly as a result of studies indicating that severe deterioration of the arteries (arteriosclerosis) is not uncommon among teenagers and young adults (Enos et

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al. 1955; McNamara 1971), researchers have begun to investigate the prevalence of cardiovascular risk factors such as hypertension in populations of children and adolescents. The population studied in this investigation is comprised of adolescents in Corpus Christi, Texas. As will be discussed in the next chapter, hypertension has many causes. It is known that some populations, such as Blacks in the United States, are much more likely to develop hypertension than others (National Center for Health Statistics 1974). The cause of this excess risk of hypertension for American Blacks is not known. Genetic, dietary, and behavioral factors associated with racial prejudice and poverty have been suggested as alternative, or perhaps complementary explanations for American Blacks' apparent predisposition to hypertension (Langford 1968).

Recently, two studies have found that the prevalence rate of hypertension for Mexican-Americans in two cities is considerably higher than the rate for White Americans. Michael Stern, Sharon Gaskill and Clarence Allen, et al. (1980) reached this conclusion in a study conducted in Laredo, Texas. In another study published in the same year, similar findings were reported based on a survey conducted in Sacramento, California (Krauss, Borhani and Franti 1980). No information is available regarding the prevalence of hypertension in Corpus Christi. However, if stressors associated with poverty and prejudice account for some of the excess risk of hypertension among Blacks, it is reasonable to hypothesize that high blood pressure might also be

more common in another population in which poverty is especially common, and against which there is a history of discrimination. Such a population exists in the Mexican-American population of Corpus Christi. The main objectives of this study are: (1) to determine whether there are differences in the average blood pressures of adolescents in Corpus Christi according to ethnicity, and other socio-cultural characteristics, and (2) to identify the biological, psychosocial and sociocultural factors that may account for any differences that may be found in the blood pressures of youths from different segments of the community.

The data on which this study is based were obtained through the cooperation of students, teachers, and administrators of four Corpus Christi area high schools from April of 1977 through May of 1980. During this period, I was employed by the Children's Heart Institute of South Texas (CHIST), which is based at the Driscoll Foundation Children's Hospital in Corpus Christi. My primary responsibilities at the CHIST were (1) to conduct research on socio-cultural phenomena relevant to pediatric cardiology, and (2) to work in the area of health education. By working in the high schools I was able to carry out both responsibilities.

In the context of teaching a two-week unit on the prevention of cardiovascular diseases in the high school health classes, I was able to collect several types of

information for this research project. After obtaining statements of informed consent from the students and their parents, I collected the following types of information:

1. Measurements of blood pressure, height, weight, and pulse rate
2. 24-hour dietary recalls
3. Information on the social and demographic characteristics of each student
4. A quantitative measurement of the psychosocial adaptation of each student
5. Interviews regarding the life histories of approximately 15 percent of the students
6. Information based on participant observation regarding the formal and informal social structures of the schools.

The perspective taken in this anthropological investigation is ecological. The underlying premise of this study is that parameters of health such as blood pressure are best understood as functions of the biological, psychosocial and sociocultural dimensions of human adaptation. In that the main emphasis of this study is the identification of social and cultural influences upon blood pressure, the study may also be regarded as social epidemiologic in nature. Before entering into the specifics of this investigation, it is useful to place in broader perspective the theoretical viewpoint taken here. The remainder of this chapter will be devoted to the explication of what is meant by an ecological perspective on health and illness.

Perspectives on Health and Illness

Health and illness may be viewed from many different perspectives. The perspective which one takes depends upon the problems which one considers most salient at a particular place and time, and within a particular socio-cultural context. Ethnographic studies have shown that every society has its own unique way of defining and acting upon questions of health and illness. The organization of the medical domain of a given society will generally reflect that society's unique perception of threats to health, and ways to avoid and counteract such threats. Likewise, differences in perception of problems of health and illness have also been shown to correspond to one's role within a given society. To a person who is sick in North American society, the most pressing problem may be the suffering that one experiences, the prognosis for one's future state of health, or perhaps the inability to function normally in one's usual social roles (Zola 1967; Zborowski 1958).

An American medical doctor, on the other hand, is more likely to be primarily concerned with the problem of identifying diseases defined in terms of abnormal biological structure or function (Fabrega 1974:132). Upon diagnosis, the physician will then proceed to counteract the disease by means of a pharmacological or surgical regimen. Although the physician may be somewhat concerned with the social causes or consequences of illness, he or she is primarily trained to deal with biologically defined diseases as they

manifest themselves within the organism. This orientation to problems of health by the physician has been labeled by Fabrega as the biomedical perspective, and has been the dominant paradigm for Western medical institutions for over a century (Fabrega 1974).

The historical roots of the biomedical perspective have been traced by Rene Dubos to two important sources. The first is the inductive philosophy of science of Rene Descartes. Although Descartes is not primarily known for his contributions to medicine, his philosophy of science was extremely important to its development in Europe. Regarding questions of health, he advocated that problems of the body be analyzed apart from the workings of the mind and spirit (Dubos 1965:377). In so doing, the complexities of the body would be unraveled by making a detailed analysis of the various components of "the body machine." The philosophy of Descartes led to many advances in science, in general, and medicine in particular. Among other developments, it led to Pierre-Fidele Bretonneau's (1778-1862) articulation of the doctrine of the specific etiology of diseases--a second important foundation of modern medicine. According to Bretonneau, each specific disease is caused by "a miasmatic organism which is incorporated in morbid secretions" and behaves as a specific transmissible agent (Dubos 1965:325). Bretonneau thus identified specific diseases each having a specific causative agent as well as a specific treatment regimen. His theory paved the way for the

germ theory a short time later and was influential in the thinking of Louis Pasteur and Edward Koch.

Descartes' method of investigating problems by breaking them down into their various components, and Bretonneau's theory of the specific etiology of disease came to serve as two important bases of the biomedical paradigm largely because of the nature of the predominant infectious and nutritional diseases of the times (Dubos 1965:325). Diseases such as scarletina and diphtheria were successfully identified as having specific causative agents producing a specific set of symptoms, and were curable with specific remedies. Thus, the theories of Descartes and Bretonneau were well suited to the diagnosis and treatment of the infectious diseases that were so common during the years in which the biomedical paradigm was becoming established in Europe and America.

In recent years, however, the credibility of the Cartesian method and the theory of the specific etiology of disease has been called into question by two developments. The first was that biomedicine was finally being applied in non-European cultures. Due to variations in nutritional factors, the presence of other complicating health conditions, and different cultural practices, it became more apparent that a specific pathogen did not always produce the same set of symptoms under all circumstances (Fabrega 1974:138). Secondly, the industrialized countries of the world (and to a lesser extent, some of the

developing countries) have seen a decline in the incidence of infectious and nutritional deficiency diseases. In their place have arisen the so-called diseases of civilization--noninfectious conditions such as the cardiovascular diseases and cancer. Due to their complex etiologies and the lack of a predominant disease agent, these diseases are less adequately explained by theories of specific etiology than the infectious and nutritional deficiency diseases. In fact, it has been persuasively argued that even in the case of infections, the importance of the disease agents has been greatly exaggerated at the expense of environmental, cultural and host factors (Dubos 1965). It has also been argued that the decline in infectious diseases is as much related to improved nutrition and sanitation as it is to vaccinations and antibiotics (Illich 1976). Despite increasing evidence regarding the importance of the environment and cultural practices on the incidence and course of illnesses, the major emphasis in the current practice of medicine in the United States remains on the diagnosis and treatment of diseases (McKinlay 1977).

It has been persuasively argued by several scholars from different perspectives that the approach to problems of health and illness in contemporary American medicine is both a reflection and an integral part of extant forms of technology and the socioeconomic system (Illich 1976; Freidson 1971; Navarro 1975; Miner 1956). In marked contrast to most other cultures that have been studied, modern

Western culture places relatively little emphasis upon social and cultural factors in determining states of health and illness. Take for example the case of heart attack and stroke. Cardiovascular conditions are, by far, the leading causes of death and disability in the United States. They account for over 50 percent of all deaths and constitute the leading cause of death among persons as young as thirty-five years of age. To address this problem, Americans spend billions of dollars for coronary bypass operations and ultrasophisticated coronary care units in hospitals. Prestigious medical centers have given hope to a worried public that these and other high technology solutions such as heart transplants may be the long-awaited definitive cures for cardiovascular disorders. Although there is no question as to the severity of the problem posed by cardiovascular diseases in the United States, some of the costly solutions chosen by society to deal with the problem are of questionable utility (Mather et al. 1971; Stern 1979). These biomedical approaches to the problem of cardiovascular diseases reflect American society's traditional faith in science and technology to solve problems. It has also been argued that they reflect the American economy's transformation of health into a commodity to be purchased in the marketplace (Illich 1976).

The Ecological Perspective on Health and Illness

In contrast to the biomedical paradigm is the ecological perspective on health and illness. According

to Rene Dubos, one of its most eloquent spokesmen (Dubos 1965:xvii),

States of health or disease are the expressions of the success or failure experienced by the organism in its attempts to respond adaptively to environmental challenges.

On the face of it, this statement appears to be very simple, but there are several points that require elaboration. As explained by Dubos, health and disease are not dichotomous states of the body, but instead, reflect the relative success of the individual in adapting to the environment. Thus, health and disease are terms that do not so much refer to the condition of the organism, but rather to the relationship of the organism to the environment.

The adequacy of this relationship is discussed by ecological theorists in terms of its adaptiveness. Adaptation is a term that has been embraced by many different disciplines, including psychology, anthropology, medicine, general biology and population genetics. The root meaning of the word, however, can be traced to Darwinian evolutionary theory. In Darwinian terms, adaptation refers to the extent that a given species can effectively utilize available environmental resources so as to successfully reproduce. In regards to the analysis of health, however, Dubos states that reproductive success is not an appropriate definition of the term (Dubos 1965:261). An individual may successfully mate, or a population may reproduce itself so rapidly that it is growing at 4 percent per year, yet still experience ill health.

Simpson has attempted to define adaptation so as to apply to all of the contexts in which it is used. "Adaptation in general may be regarded as a complex of processes (and results of processes) bringing about and maintaining an organism-environment relationship useful to individual organisms and populations" (Hamburg, Coelho and Adams 1974: 403). Although this definition avoids the limiting criterion of reproductive success, to define adaptation in terms of "useful" organism-environment relationships is hopelessly vague. Instead of referring to reproductive success or to relationships with the environment that are "useful" to individuals and populations, Dubos describes adaptedness as a type of relationship of the human organism to the environment such that it allows the organism not only to maintain homeostasis, but also to creatively respond to environmental challenges (Dubos 1965:257). In that Dubos is specifically interested in the health of the human organism, he limits his definition of adaptation to the individual. Although more specific than Simpson, Dubos' definition of the term makes it somewhat more subjective than the others. For Dubos, himself, has noted that homeostasis is an ideal state to be approximated, but can never be achieved. Also, it is no simple matter to determine whether one's response to an environmental challenge is "creative."

In order to clarify the concept of adaptation as it is used in the analysis of health, it is useful to separately discuss three interrelated dimensions of organism-environment

relationships: (1) the biological dimension; (2) the psychosocial dimension; and (3) the sociocultural dimension. The biological and psychosocial dimensions of adaptation refer to the most immediate aspects of interaction between the individual organism and the environment. Although it is not often included in the analysis of the health of individuals, the sociocultural dimension is equally important to an ecological analysis of health in that it defines the range of possibilities for the biological and psychosocial aspects of adaptation.

The Biological Dimension of Adaptation

The biological dimension of adaptation is perhaps the most basic in that the human organism shares the need to approximate a condition of homeostasis within given environmental parameters with all other living things. Besides being basic to the ecological perspective on health, the analysis of the biological dimension of adaptation is also fundamental to the biomedical perspective. A minimal necessity of the organism is to be able to make the physiological responses to bacteria, viruses, nutrients, changes in temperature, etc. so as to maintain the parameters of the body systems within functional limits. In this sense, while it could be said that the biomedical perspective is also ecological, to limit one's focus to biological adaptation is to arbitrarily restrict the scope of analysis of the determinants of the health of Home sapiens. To merely examine the biological aspects of adaptation is to ignore

the implications of the human capacity to evaluate the environment in symbolic terms. In the words of Dubos (Dubos 1965:xviii),

The components of the body machine react with the environment in the same way as do similar components in any other living or inanimate system. But living man responds to the environment. I have intentionally differentiated between reaction and response to emphasize that human adaptation can seldom be regarded as merely the result of man's body reacting with environmental forces [emphases Dubos'].

The Psychosocial Dimension of Adaptation

Human adaptation, of course, depends upon the application of socially learned knowledge to meet everyday needs. But it is not just the practical application of culture to meet the basis needs of survival that is unique to human adaptation. In Dubos' terms this is not the only way that the human organism "creatively responds" to environmental challenges. Whether we are aware of it or not, the human organism is constantly responding to its perceptions and evaluations of what goes on around it. For better or for worse, this process has an impact upon health.

Selye and the General Adaptation Syndrome

A major advance in the understanding of this process has come from the work of Hans Selye. It was his work that opened the door to the understanding of the relationship of what may be called psychosocial adaptation to biological parameters of health. Physiologists have long studied specific patterns of reaction of the body to specific environmental stimuli. Early in his

career, however, Selye noticed that the body has certain common responses to all noxious stimuli (Selye 1971). These responses occur in three stages: (1) the stage of alarm; (2) the stage of resistance; and (3) the stage of exhaustion. Selye first called these three stages of reaction to all noxious stimuli the biological stress syndrome, but later adopted the term, the general adaptation syndrome (GAS). In recent years, Selye has altered his original belief that only noxious stimuli may trigger the general adaptation syndrome. He now contends that joy, excitement and ecstasy may also produce the same effect. Selye now defines as stressors any stimuli that evoke the general adaptation syndrome.

Selye has experimentally produced this syndrome in rats by the application of such varied stimuli as cold, heat, physical trauma and infection. One common result of these varied stressors was to produce the secretion of adrenalin. Other common results included the enlargement of the adrenal cortex, gastrointestinal ulcers, and the shrinkage of the thymus and lymph nodes. Prior to Selye, however, Walter Cannon, the man who introduced the concept of homeostasis, noted that the secretion of adrenalin occurs in association with the emotions of rage and fear (Dubos 1965:260). As Selye is a physician and a professor of histology, he did not directly experiment with symbolic or emotional stimuli as stressors for humans. But given the long-recognized relationship between the secretion of

adrenalin and certain emotions, Selye notes that psychosocial stimuli may be as potent as the physical stimuli used in his experiments as stressors.

According to Selye, typical morbid consequences for humans of the general adaptation syndrome include gastric ulcer, high blood pressure, migraine headaches, cerebrovascular disease and pains in the neck. In a series of studies conducted with rats in the 1940s, Selye was able to demonstrate the relationship between hypertension and the experimental application of one of the so-called stress hormones secreted by the adrenal cortex. An interesting aspect of these experiments was that although the application of the hormone, alone, produced hypertension, when salt was also administered to the rats, there was a greatly magnified synergistic effect upon blood pressure (Selye 1978). Such experiments suggest the inseparability of the analysis of physical and psychosocial adaptation in the analysis of health. Whether the end result of the general adaptation syndrome is hypertension, heart attack, ulcer, or neck pain depends upon certain conditioning factors which tend to target particular organs or functions of the body over others (Selye 1978).

Considering Selye's background as a physician and a biological scientist, it is not surprising that it has been left to others to demonstrate in a more specific way the relationship of emotional and symbolic stimuli to the activation of the general adaptation syndrome. Although

there are doubts about some aspects of Selye's theory, there is no question that he has led the way to the further investigation of the effects of psychosocial adaptation upon biologically defined parameters of health.

Most scholars who have been interested in the psychological and social aspects of health have not specifically followed Selye's model of the general adaptation syndrome. There has been much work done in attempting to associate specific psychological and social characteristics to parameters of health and illness. The biological means by which the organism reacts to these characteristics have received less attention--probably due to the cost and complexity of investigation, and the reluctance of many scholars to engage in interdisciplinary projects (Shapiro et al. 1979).

Most researchers of the relevance of the psychosocial dimensions of adaptation to health explicitly or implicitly reject Ruth Benedict's "tabula rasa" view of humankind (Benedict 1934). While fully recognizing the vastly different ways that culture defines experience, scholars nonetheless maintain that certain minimal requirements must be met for the healthful psychosocial adaptation of all humans. To precisely define these determinants is a matter of considerable debate among students of psychosocial adaptation (Antonovsky 1979). Many hypotheses regarding these requirements have been investigated, but most can be grouped into three categories: (1) power and self

esteem; (2) level of stimulation; and (3) change and incongruity.

Power and Self Esteem

Walter Goldschmidt states (1974:14):

I believe there exists something that can be called a human ethology. But difficulties that do not bother those who watch sticklebacks and herring gulls face those who seek a human ethology, a human nature; for whatever is ethological is overlain by culture. . . .

My ethnological observations lead me to an ethological conclusion about Homo sapiens that is different from that made by those that assert preprogrammed aggression and territoriality. It is not that the individual is quintessentially aggressive or possessive, but rather that he is quintessentially concerned with the maintenance and furtherance of a positive self image. . . .

It is, as Hallowell (1967) has pointed out, the symbol of the self that lies at the very center of man's symbol system. That is, each normal individual in a normal community acts in such ways as to enhance the quality of that symbolic self. It is enhanced by the tokens that the community recognizes as significant and relevant to what makes a person good, substantial, powerful and prestigious. These may vary from the admiring glances of a pretty girl to the acquisition of the Nobel prize. Significantly, however, they are meaningful to the purpose precisely because they are the perception of others.

Goldschmidt is only one of many scholars who have posited a need in humans to control social and material resources perceived as important to one's well-being. Writing in the same volume as Goldschmidt (Hamburg, Coelho and Adams 1974), Mechanic, Lazarus, White, Murphy, and Hamburg, Coelho and Adams all emphasize the importance of having sufficient power over the environment so as to control those socially defined resources perceived as necessary for physical adaptation and psychological coping. Much research

has been done on the consequences of experiencing both acute immediate threats and chronic challenges to material or psychological well-being.

The health consequences of having survived military combat (Graham 1945), explosions (Ruskin et al. 1948), and other circumstances posing acute threats to well-being have been well studied. Also, anthropologists have noted that it is part of the medical beliefs of many cultures that the experience of fright or the perception of threat to one's well-being may cause ill health (Rubel 1964; Glick 1967). The health implications of chronic threat are known from animal experiments (Henry et al. 1967) and from observational studies of persons who, for example, had been confined in concentration camps or as prisoners of war (Antonovsky et al. 1971). R. D. Laing (1967) has documented in case studies an apparent relationship between the development of schizophrenia and the denial by significant others of social support. Also, it is known that separation from a loved one can lead to ill health (Bowlby 1969; 1973), and that the death of a spouse significantly increases the likelihood of one's own death shortly thereafter (Jacobs and Ostfeld 1977; Parkes et al. 1969). In sum, there is ample empirical evidence that both the perception of threat to one's physical well-being and the absence of social support can have deleterious health consequences.

According to Dubos, health does not result from the mere avoidance of physical and psychosocial threat (1965:

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390). "One of the most important characteristics of man is to be goal seeking, an attitude very different from mere threat avoiding." He states further (1965:397), "For reasons that are still obscure, lack of fulfillment is at the root of much organic as well as mental disease everywhere in the world." Evidence supporting Dubos can be found in studies of the health status of persons who have recently retired from work. Retiring from one's job, which presumably has served not only as a means of obtaining physical necessities, but also as a means of validating one's self worth, has been shown to increase one's chances of an early death (Antonovsky 1979). Lazarus also has suggested that it may be necessary to examine the health implications both of positive challenges and negative threats to self esteem. According to Lazarus (1978), it may be that in terms of their implications for health, there is no fundamental difference in the perception of challenges and threats.

Level of Stimulation

Being employed in especially challenging jobs such as air traffic control or being a telephone operator in a busy exchange increase the likelihood of ill health (Kirtz and Moos 1974). It has been argued that there may be an optimal level of sensory stimulation for each individual organism and it does not matter whether stimuli are evaluated in a positive, negative, or neutral way (Holmes and Masuda 1974). Studies of the effects of exposure to loud and constant noise (Anticaglia and Cohen 1974) support the

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position that too much sensory stimuli may have deleterious health consequences. Whether the level of stimulation which one experiences is too much, too little, or just right apparently depends as much upon the manner in which the individual perceives the stimuli as upon the stimuli themselves (Kirtz and Moos 1974). Ray Rosenman and Meyer Friedman (1974) have shown that regardless of their objective work loads, persons who characteristically perceive themselves in "a relatively chronic struggle to obtain an unlimited number of relatively poorly defined things from the environment in the shortest period of time" (Friedman 1969) experience more cardiovascular disease than others. The work of Spitz (1954) and others in the area of hospitalism, or infantile failure to thrive, underscore the health implication of understimulation.

It has been suggested that because some of the studies regarding the influence on health of levels of sensory stimulation involve symbolic stimuli (e.g. in the case of air traffic controllers) while others involve non-symbolic stimuli (e.g. noise pollution), the means by which symbolic and nonsymbolic stimuli affect health may be different (Lipowski 1974). Nonetheless, studies of the influence of levels of sensory stimulation on health have been considered as a unique category of research, and here constitute the second category of studies regarding the requirements of healthful psychosocial adaptation.

Change and Incongruity

A third type of research regarding the health implications of psychosocial adaptation is characterized by the investigation of change, incongruity and incoherence. Some of the best known work in this field has been done by Bruce and Barbara Dohrenwend (1973) and T. Holmes and R. Rahe (1967). The Dohrenwends and Holmes and Rahe created lists of life events which imply significant changes in social adaptation. As stated by Holmes and M. Masuda (1974), "The greater the life change or adaptive requirement, the greater the vulnerability or lowering of resistance to disease, and the more serious the disease that does develop." In these indices of change, it makes no difference in its impact upon health whether the change is positively evaluated (i.e., getting married, or a job promotion) or negatively evaluated (i.e., losing one's job). Studies by John Bruhn et al. (1966), John Cassel (1975) and S. L. Syme et al. (1965) describe adverse health implications of changing one's geographic location, living in an environment in which people are changing around you, but you stay the same, and holding incongruent social statuses.

Another approach to the study of the health implications of change and incongruity is exemplified by the social environment rating scales of Rudolf Moos. According to S. Kirtz and Moos (1974:14).

The construction of these scales was inspired by the premise that environments, like people, have personalities. Just as some individuals are usually

experienced by their associates as warm and supportive, some environments are felt to be supportive by their members. Some individuals are bossy and controlling; similarly some environments are extremely controlling. Order and structure are important to many people; correspondingly, many environments emphasize system and order. A source of distress and ill health is the situation in which a person attempts to function within an environment with which he is basically incompatible.

In sum, the main interest of Moos and associates in developing these scales was the measurement of person-environment fit.

While Moos' scales themselves have not been widely used in determining the relevance of person-environment fit to health, many of the dimensions of his scales have been associated with health indices. Moos has developed scales to measure the ways that home, school, work and other environments are perceived. Although the specific items on these scales differ due to the different environments that they are designed to measure, they are comprised of three basic dimensions. These dimensions and some of the characteristics of each that have been related to health indices are: (1) the relationship dimension, including measures of supportiveness (McCarthy and Booth 1970), cohesion (Costell and Leiderman 1968), and involvement (Back and Bogdon 1964); (2) the personal development dimension, including responsibility, and (3) the systems maintenance dimension, including work pressure (Sales 1969), clarity (Reiser et al. 1955; Ruben et al. 1969) and change (Holmes and Rahe 1967).

This discussion of the implications of psychosocial adaptation for health is not intended to be a complete

review of the subject. Such a review is quite beyond the scope of this introductory chapter. Instead, this discussion is intended to identify some of the basic findings in support of the position that the analysis of the psychosocial dimension of human adaptation is as relevant to the analysis of health as the biological dimensions of adaptation. However, even with the addition of the psychosocial to the biologic dimensions of adaptation, there is a very fundamental but often neglected aspect yet to be considered in the ecological analysis of health. This discussion of adaptation and health has thus far been limited to the analysis of the relationship of individual organisms to the environment. Home sapiens, however, is a culture bearing, social animal. Therefore, any ecological analysis that does not consider the impact of society and culture on health is necessarily incomplete.

The Sociocultural Dimension

One of the many ways to define culture is as "something which man interposes between himself and his environment in order to secure his security and survival (Carneiro 1968). Since societies with different cultures pursue this objective of insuring security and survival in different ways, the types of challenges posed to health and the resources available to meet those challenges will vary accordingly. Culture also determines the types of health problems to which one will be exposed according to one's position in a given sociocultural system. Although the analysis of the

biological and psychosocial dimensions of adaptation may provide rather thorough information regarding the immediate determinants of the health of individuals, only an analysis of the sociocultural dimension will explain the types of environmental challenges that one is likely to face and the types of resources available to face them. Thus, it is ironic that although sociocultural factors may be more distal to the analysis of the health of individuals, they are the most influential determinants of all. Just as society may not be understood by separately studying each member of society, the determinants of the health of societies, or segments thereof, will not be understood solely by studying the health of individuals.

It is known that the poor in the United States have a higher overall mortality rate than the affluent (National Center for Health Statistics 1975). Because of the types of environmental challenges posed by occupying many of the positions in the social structure associated with poverty, the poor are especially more likely than the affluent to be afflicted with diseases such as pneumonia, tuberculosis, and gastroenteritis. Similarly, studies have demonstrated that persons exposed in their work to certain materials such as asbestos are at increased risk of cancer. Air traffic controllers are particularly susceptible to ulcers (Kirtz and Moos 1974). In sum, it has been amply demonstrated that health is influenced by the various statuses that one holds. Such observations support the view that

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an analysis of social and cultural factors is essential to understanding the types of health risks that arise among the different segments of society.

Even greater variations in the types of health problems that occur can be observed among different types of societies. For example, the great epidemics of infectious diseases, such as measles, pneumonia, typhus, etc. could not occur until agriculture provided a sufficient surplus product to allow for the formation of states, and the concentration of large numbers of people in densely packed cities (Dubos 1965). Charles Hughes and John Hunter (1970) have discussed how in Africa, certain cultural practices that have long been adaptive may no longer be so, due to the imposition of new technology and forms of social and economic organization. The installation of wells in arid areas and efforts to sedentize nomadic peoples have led to overgrazing and desertification of lands, and a diminished ability to obtain adequate resources for survival. The construction of dams and irrigation ditches has greatly magnified the problem of schistosomiasis in some areas. The severity of schistosomiasis and other parasitic and infectious diseases is aggravated when undernutrition lessens the body's resistance to disease. In many underdeveloped countries of the world, where extreme poverty and undernutrition are common and where the basic public health and sanitary infrastructures are lacking, infectious diseases continue to constitute the primary threats to health--

especially among infants and children. The wealthy of these same countries, however, share a disease pattern similar to that of the more affluent nations of the world--e.g. coronary heart disease, stroke, and cancer (Bryant 1969; Stamp 1964).

Increasingly research is being devoted to the economic, political, social, and technological determinants of high mortality rates due to infectious diseases in the developing world (Navarro 1974; 1976). It is ironic that while most of the people of the world suffer from diseases associated with poverty, undernutrition, and a lack of basic resources, the most common health problems in the United States and other developed countries are associated with diseases of the cardiovascular system--diseases known to be related to overnutrition, lack of physical activity, and perhaps a general overutilization of the world's resources.

Anthropology and the Study of Health and Illness

Since the very first studies in the discipline, anthropologists have been interested in the examination of health and illness as cultural phenomena (Hasan 1978). Anthropologists have long been fascinated by relating explanations of illness and modes of healing to the overall organization of cultures and the functioning of social systems. Studies that have examined health or medicine strictly in the terms of a given culture have been called by Fabrega and others "ethnomedical" approaches to the study of health phenomena (Fabrega 1974). Until the 1940s,

questions of health were seldom, if ever, examined apart from a more general analysis of society or culture. In fact anthropologists have been so oriented to the study of health and illness as cultural phenomena that some have even claimed that the biological aspects of illness are of no relevance to an anthropological analysis whatsoever (Ackernect 1942). Although ethnomedical studies often examined the relationship of culture to emotional and psychological issues, rarely have they studied the relationship of culture to biological parameters of health.

It was not until the end of World War II that anthropology became interested in health and illness as anything more than aspects of culture. In the late 1940s there emerged the international public health movement. Anthropologists such as Ben Paul became involved in an effort to persuade peoples who had not yet been exposed to Western biomedicine to accept it. Paul and other anthropologists such as George Foster investigated how cultural and social characteristics of non-Western populations may interfere with the acceptance of public health programs. On the basis of anthropological research, culturally relevant solutions to such problems were sought. William Caudill labeled this type of research "applied anthropology in medicine" (Foster 1974).

One of the earliest and most noteworthy investigations by an anthropologist of biomedically defined diseases was the physical anthropologist, F. B. Livingstone's study,

published in 1958, of the relationship of malaria to sickle cell anemia and the spread of agriculture in Africa. One of the first such studies by a cultural anthropologist was Norman Scotch's study of sociocultural characteristics that promote hypertension (Scotch 1957). While Livingstone's analysis was focussed primarily on the sickle cell trait as a genetic adaptation to malaria, Scotch analyzed the relationship of society and culture to the prevalence of hypertension. Both Scotch's and Livingstone's studies were fundamentally different from previous ethnomedical approaches to health phenomena in that their intent was to investigate the determinants of biomedically defined diseases rather than the analysis of disease as a cultural category.

While noting the general similarity in theoretical orientation of Scotch's and Livingstone's work, Horacio Fabrega categorizes Livingstone's study as a medical ecological approach to medical anthropology research, while Scotch's approach is called special epidemiologic (1974: 59). Although both studies employ an ecological perspective on health and illness, Fabrega calls studies ecological when they are conducted in nonindustrial societies in which the parameters of the ecosystem can be readily measured, and adaptation is defined in terms of differential rates of reproduction. Fabrega describes a study as social epidemiologic when the social environmental causes of disease are investigated and adaptation is defined in terms of the effects of the environment on the health status of a

a population--but not necessarily their rates of reproduction.

A Linked Open Systems Model for the Investigation
of the Blood Pressures of Corpus Christi Adolescents

This study, then, is an ecologically oriented social epidemiologic investigation of one cardiovascular risk factor--high blood pressure. Seventeen years ago John Cassel recognized that an epidemiologic research model that merely establishes a relationship between a certain physical or behavioral characteristic and an individual's risk for a given illness does not adequately explain disease causation--especially for the chronic diseases of contemporary North American society (Cassel 1964). Cassel called such a paradigm for epidemiologic research a closed system model--e.g., hypertension stroke. What Cassel proposed in its place has served as a model for social epidemiologic research by anthropologists and others since that time. Cassel recommended the adoption of a linked open systems model for epidemiologic research--a model that takes into account the various types of adaptations characteristic of human groups to their environments. The linked open systems considered by Cassel's model are the psychological, social, cultural, and physical systems. According to Cassel, an imbalance, rapid change, or significant deviation from homeostasis in any of these linked open systems could contribute to the emergence of one or more diseases in a population.

Scotch (1957), Cassel (1975), Ralph Patrick (1974), Alexander Leighton (1959), and Barbara and Bruce Dohrenwend (1973) are among the social scientists who have done this type of social epidemiologic investigation. These scholars have made significant contributions to the understanding of the relationship of the workings of society and culture to disease processes. Such social epidemiologic studies are, however, open to criticism from a number of points of view. How, for example, does one operationalize the investigation of human adaptation by using Cassel's four broadly defined linked open systems? How does one determine which aspects of psychological, social, cultural, and physical adaptation are relevant to health, and how does one bridge the gaps among these four levels of analysis? These and other problems associated with the social epidemiologic model will be dealt with in this study.

Cardiovascular diseases account for over 50 percent of all deaths in the United States (National Center for Health Statistics 1975). The same is true for the Corpus Christi area. In order to understand the reasons why cardiovascular diseases are so prevalent in the U.S., or in any given place such as Corpus Christi, it is not sufficient to know that hypertension is associated with heart disease and that there are many hypertensive people; or that there are many obese people and that obesity is associated with heart disease; or that many people smoke and smoking is associated with heart disease. Rather, it

is essential to investigate the complex of social, psychological, physical and cultural factors that explain why so many Americans acquire these characteristics that increase cardiovascular risk in the first place.

There is ample evidence in the literature that a large percentage of adults with cardiovascular risk factors acquire these characteristics during youth (Strong 75; Blumenthal 1973). Despite the fact that heart attack and stroke seldom manifest themselves during adolescence, it is clear that these diseases result from a very long process of deterioration of the cardiovascular system. Although it is known that some people are genetically predisposed to the development of cardiovascular diseases, much is believed to be associated with socially learned behavior patterns that may have become established during childhood. For example, James Henry and John Cassel write (1969:194), "The symptoms which bring the patient to the physician with the final kidney, heart, or central nervous system breakdown may be only the last phase in a complex chain of events whose start lies buried in the early experiences of the individual and his culturally determined pattern of response to an environment which is becoming increasingly dissonant."

In the statement quoted above and elsewhere, Henry and Cassel have emphasized the importance of dissonance, incongruity, and change as psychosocial adaptational factors leading to ill health. As previously discussed, other researchers have emphasized the importance of factors such

as powerlessness and sensory overload leading to ill health. In the next chapter, a number of studies will be reviewed that have statistically related various social structural circumstances to hypertension in adults. Most of these studies presume that the various forms of social and psychological incongruity, powerlessness, overload, etc., constitute stressors--i.e., they are stimuli that trigger Selye's general adaptation syndrome, or something like it. The general adaptation syndrome is, in turn, presumed to be the cause of hypertension. Also to be reviewed in the next chapter are a number of epidemiologic surveys of the blood pressures of children and adolescents. Although few of these studies of young people have attempted to examine the impact on blood pressure of the psychological and social characteristics associated with high blood pressure in adults, never have any of these characteristics been associated with high blood pressure among young people.

In this study, it is hypothesized that: (1) problematic psychosocial adaptation will be more common among Mexican-Americans and Blacks than among Anglos; (2) the average blood pressures of Mexican-American and Black youths will be higher than the average blood pressure of Anglo youths; and (3) problematic psychosocial adaptation will be associated with high blood pressure among adolescents in Corpus Christi. One problem with most studies of the determinants of high blood pressure by social scientists is that although characteristics that are considered to be

psychological and social stressors have been statistically associated with high blood pressure individually; little progress has been made in explaining how sociocultural factors such as poverty, social change and incongruity cause stress, and how such stress, in turn, causes hypertension. Also in these studies, the influence of biological factors is often ignored. As mentioned in reference to Cassel's social epidemiologic model, a methodological challenge is to bridge the gaps among the biological, psychological, social and cultural levels of analysis. The broad view of the anthropologist is especially appropriate to this task.

In conducting this study among adolescents rather than adults, it is hoped that the social determinants of the early phases of hypertension will be identified. For, as Cassel suggests, pathology which manifests itself at an advanced stage of life may have its origins in youth. The identification of psychosocial and sociocultural influences on blood pressure may or may not help in efforts to prevent cardiovascular diseases. If, for example, poverty or prejudice is shown to promote hypertension, then nothing less than their elimination may be necessary in order to attack the basic causes of hypertension-related cardiovascular diseases. While this study's principal aim is to identify the influence of sociocultural phenomena on blood pressure, it is hoped that it may also be of value in identifying specific efforts at disease prevention which may be effective.

CHAPTER II

LITERATURE REVIEW

The Framingham Study

Over the past quarter of a century, much research has been conducted for the purpose of identifying the determinants of cardiovascular illness. In order to place the present study in perspective from the point of view of empirical findings and theory, the more important of these investigations--especially those relating to blood pressure--will be reviewed in this chapter. To begin this endeavor, the pioneering investigation in this field, the Framingham study, will be examined. It was the Framingham study which first empirically identified the major determinants of cardiovascular disease (Mitchell and Jesse 1973).

The Framingham study, begun in 1948, confirmed by the prospective study of a community that which had previously been suggested by animal experiments and clinical studies: the incidence of coronary heart disease would not be distributed evenly among all segments of a human population. William Kannel, Thomas Dawbner, Abraham Kagan, and their associates (1961)--all medical doctors--selected for study all 6,500 residents of Framingham, Massachusetts,

between thirty and fifty-nine years of age. At the time of their selection, each of the 6,500 persons received a thorough physical examination and various laboratory tests. Six years later, surviving subjects were reexamined for the purpose of determining how many persons had developed symptoms of heart disease over that period.

Nearly 90 percent of the original 6,500 subjects were reexamined. Two and one-half percent were known to have died. The cause of death was determined from death certificates. Either of the following two criteria were used to establish the presence of coronary heart disease (CHD) among subjects who were reexamined: (1) angina pectoris as reported by the subject, and (2) evidence of myocardial infarction or acute, prolonged coronary insufficiency as determined by electrocardiography.

The most basic finding of the Framingham study was the difference in the rate of coronary heart disease by sex. Among persons who were between the ages of thirty and forty-four when the study began, the prevalence of coronary heart disease among men was more than twelve times greater than the prevalence rate among women. The rate was twenty-five per one thousand for men as compared to two per one thousand for women over the six-year period. Among persons between forty-five and sixty years of age, however, the rate of heart disease for men was only twice as great as that for women. The rate was ninety-one per one thousand for men as compared to forty-five per one thousand for women.

Prior to the Framingham study, the only evidence linking high blood pressure to coronary heart disease was from clinical observations and laboratory experiments with animals. The epidemiologic study at Framingham definitively established that the risk of coronary heart disease increases with the elevation of either systolic or diastolic blood pressure. Neither systolic nor diastolic blood pressure was shown to be the more powerful predictor. High blood pressure was an especially important predictor of heart disease for the young and middle-aged. Hypertensive (i.e., at least 160 mm Hg. systolic or 95 mm Hg. diastolic) men between forty and fifty-nine years of age were 2.6 times as likely to experience CHD than normotensive (less than 140 mm Hg. systolic and 90 mm Hg. diastolic) men. Hypertensive women under sixty years of age were six times as likely to experience CHD than normotensive women.

The Framingham study also established the magnitude of risk associated with elevated levels of serum cholesterol. There was a threefold increase in coronary heart disease risk among men forty to fifty-nine years of age with hypercholesterolemia (at least 245 mg %) and a 1.6 fold increase for hypercholesterolemic women. If a person were both hypercholesterolemic and hypertensive, that person would have an even greater risk of CHD than would be expected by simply adding the excess risk associated with each characteristic. It is important to note that the Framingham study and all other subsequent studies have

found that the risk of CHD increases curvilinearly with rises either in blood pressure or cholesterol levels. Any cut-off point defining abnormality, such as 160/95 in the case of blood pressure or 245 mg % in the case of cholesterol is strictly arbitrary.

Other epidemiologic studies such as the one conducted in Tecumseh, Michigan (Johnson et al. 1964) have basically confirmed and expanded upon the data obtained at Framingham regarding the excess risk for heart disease associated with blood pressure, cholesterol, obesity, and smoking. As was the case with the Framingham study, however, these studies have only associated certain physical and behavioral characteristics with CHD during adulthood, without reference to the sociocultural context in which they occur. In order to obtain a broader understanding of why coronary heart disease is so prevalent, it is necessary to investigate the sociocultural context that is associated with the early phases of the disease process. Available evidence indicates that in order to do this one must focus on the early phases of life--i.e., childhood and adolescence (McGandy 1971; Strong 1975).

The Pediatric Origins of Atherosclerosis and Coronary Heart Disease

The term coronary heart disease includes several related conditions such as angina pectoris, myocardial infarction and sometimes heart failure. The underlying cause of these conditions is the hardening and narrowing of the

coronary arteries which feed the myocardium (heart muscle). The process by which the coronary arteries, or any other artery, becomes occluded is called atherosclerosis. When atherosclerosis reaches a point in the coronary arteries at which the normal supply of blood to the heart is disrupted, then one of the forms of coronary heart disease will manifest itself. When this same atherosclerotic process occurs in the arteries feeding the brain, the result is cerebral infarction or stroke. This process may also occur in the more peripheral arteries of the body and result in gangrene (McMillan 1973; Wissler 1973).

Autopsy data collected by the International Atherosclerosis Project (IAP) suggests atherosclerosis has its origins in youth (Keys 1970). Several thousand autopsies were conducted on persons of all ages, from countries of varying heart disease rates, who had died from causes that were not heart related. Aortas were examined for evidence of atherosclerosis. By three years of age fatty streaks were present on the inner lining of almost all of the aortas that were studied, irrespective of racial or geographic origin. It is thought that while these fatty streaks may dissipate in some cases, in others they evolve into irreversible fibrous plaque. This fibrous plaque begins to appear by the third decade of life, but occurs earlier and more frequently in persons from the U.S. and other areas with high rates of coronary heart disease. The fibrous plaque may later become calcified and can result

in arterial hemorrhage, ulceration, necrosis, and thrombosis. At this stage the clinical manifestations of myocardial or cerebral infarction, angina pectoris, gangrene of the extremities or aortic aneurism are likely to occur. Experimental data from animal studies have shown that the rate of atherosclerotic progression is influenced by the known cardiovascular risk factors such as smoking and hypertension (Wissler and Geer 1972). Thus, both animal experiments and cross-sectional survey data from the International Atherosclerosis Project suggest that although not all fatty streaks which first appear in childhood evolve into irreversible lesions, some do. In any case, the appearance of irreversible fibrous plaque begins in very young adulthood, especially among males from the U.S.

The severity of this early atherosclerotic deterioration is underscored by autopsy studies of American soldiers killed in Korea and Vietnam (Enos et al. 1955; McNamara et al. 1971). The coronary arteries of male soldiers, whose average age was twenty-two, were examined for evidence of atherosclerosis. Such evidence was found in 77 percent of the soldiers from Korea, with severe atherosclerosis (occlusion of over 50 percent of any coronary artery) being found in 10 percent of the cases. In contrast, using more sophisticated methods, researchers found evidence of coronary atherosclerosis in 45 percent of American soldiers from Vietnam, and severe atherosclerosis in 5 percent. Whether the apparent decline in atherosclerosis

among American soldiers between the Korean and Vietnam wars is due to different research methods (as suspected by S. McNamara et al.) or to an actual improvement in cardiovascular health is not known. In any case, both studies found that a very significant percentage of young American male soldiers had atherosclerotic lesions in their late teens and early twenties. In sum, the evidence from these studies clearly indicates that serious deterioration of the coronary arterial system often begins early in life.

Although there is good reason to believe that coronary heart disease begins in youth, it is not necessary to rely solely on the early presence of actual atherosclerotic deterioration to support such a position. It is only necessary to demonstrate that the behavioral and physical characteristics that predispose one to CHD may become established early in life. Cigarette smoking is certainly one such characteristic most commonly adopted during youth (Sexton 1975). Obesity is also commonly observed in the United States among children and adolescents. S. Abraham et al. (1971) determined that 84 percent of males who were at least 20 percent over their expected weight for height between the ages of ten and thirteen remained overweight at forty years of age. Boys who had average or less-than-average weight for height between the ages of ten and thirteen were only one-ninth as likely as the heavy boys to be obese at age forty. Fully 92 percent of girls who were 20 percent overweight between the ages of ten and

thirteen were also obese when they reached their early thirties. Obese girls were eighteen times more likely to be obese in their thirties than were females who were within 5 percent of their expected weight for height during childhood. It is also significant to note that Abraham et al. found that individuals who were at least 20 percent overweight during childhood were more likely to have higher blood sugar, blood pressure, and more cardiovascular and renal disease in their thirties and forties.

Elevated levels of serum cholesterol that appear early in life also have a tendency to persist over time. William Clark et al. (1978) longitudinally studied serum cholesterol and other parameters relevant to cardiovascular health over a six-year period. The study was conducted in Muscatine, Iowa among children whose ages ranged from eight to twelve years at the start of the study. Fifty percent of those children whose cholesterol values were initially in the highest quintile of the population distribution remained in the highest quintile six years later. The Pearson Correlation Coefficient between the first observation of serum cholesterol and the last observation six years later was .61. Although there are no studies relating serum cholesterol values during childhood to subsequent mortality or morbidity, these two studies suggest that elevated cholesterol values early in life have a tendency to last into adulthood.

As in the case of cholesterol, Clarke and others have found that there is a tendency for relatively high

blood pressure found during youth to persist over time. In the case of the Muscatine study, 60 percent of children initially in the highest quintile for systolic blood pressure remained in the highest two quintiles two years later. Although the Pearson Correlation Coefficient for systolic blood pressure was somewhat less than that of cholesterol, it was a highly significant .30.

In a similar study, Sol Londe et al. (1971) examined seventy-four children between the ages of four and eighteen whose blood pressures were consistently above the ninetieth percentile for their age and sex. All subjects received a thorough examination in an attempt to find a specific cause for their elevated blood pressures. In only three cases were the blood pressure elevations found to be secondary to some other physical problem. After following the seventy-four children for an average of three and one-half years, two-thirds of them were still considered to be hypertensive. Many other prospective studies have also reported that if one's blood pressure is relatively high at one point during youth, it is likely to continue to be relatively high in comparison to one's age and sex group years later. This is true whether the initial observation is made during infancy, childhood, or adolescence. This tendency for blood pressures to "track" appears to be strongest when the initial blood pressures are recorded during adolescence rather than infancy or early childhood. (Paffenbarger et al. 1968; Harlan et al. 1973; Thomas et al. 1964; Julius et al.

1964; Buck 1973; Kass 1975; Zinner et al. 1975; Kass and Zinner 1969).

Ralph Paffenbarger et al. (1968) conducted a retrospective study relating the blood pressures measured in 1962 of males who attended the University of Pennsylvania to the blood pressures measured thirty years earlier during a physical examination which was a prerequisite for admission to the university. The average age of the subjects at the time of admission to college was nineteen years. Questionnaires were mailed to 9,565 of the former students inquiring as to the presence of doctor-diagnosed hypertension (at least 160 mm Hg. systolic or 95 mm Hg. diastolic). Eighty percent of the questionnaires were returned. The prevalence of subsequent hypertension for persons whose systolic or diastolic pressures were originally in the highest quartile was two and one-half times that reported for other men. Seventeen percent of persons whose original systolic blood pressures were at least 130 mm Hg. subsequently reported being hypertensive (at least 160/95) compared to only 6 percent of subjects whose systolic pressures were originally less than 130 mm Hg. A rapid pulse rate and heavy body build at the time of initial examination significantly increased the likelihood of subsequent hypertension.

A similar retrospective study was conducted with 208 white male graduates of the schools of medicine, dentistry and engineering of the University of Michigan.

Stevo Julius et al. (1964) found that 26 percent of subjects with blood pressure of at least 140 mm Hg. systolic or 90 mm Hg. diastolic at twenty years of age had pressures of at least 150 mm Hg. systolic or 90 mm Hg. diastolic twenty years later. This compares to only 12 percent of those whose original blood pressures were less than 140 mm Hg. systolic or 90 mm Hg. diastolic. Julius recognized that although the single blood pressure measurement during a physical exam at age twenty was somewhat predictive of subsequent hypertension, the predictive power of early readings would be greatly improved if repeated measurements under less extraordinary circumstances (e.g., at home) could be obtained.

Perhaps the most powerful piece of evidence regarding the significance of early blood pressure elevations to subsequent health status is from a study by S. Heyden et al. (1969) in Evans County, Georgia. In that study, a representative sample of 435 adolescents (defined by the investigators as between fifteen and twenty-five years of age) from the county was selected. In this sample, there were 129 white males, 120 white females, ninety Black males, and ninety-six Black females. Eleven percent of the population was classified as hypertensive on the basis of an average of three blood pressure readings at or above 140 mm Hg. systolic, or 90 mm Hg. diastolic. In comparison to other studies, the Evans County study was very "liberal" in its definition of hypertension (Voors et al. 1976; Reichman et al. 1975). By using the average of three blood pressure

readings instead of the lowest of the three as is sometimes done in an effort to obtain a basal measurement (Kilcoyne 1974), Heyden undoubtedly included a number of individuals whose blood pressures were only temporarily elevated.

After seven years, thirty individuals who originally had been classified as hypertensive were reexamined. It was determined that these thirty hypertensives did not significantly differ from the other twenty hypertensives who could not be located from the original survey in regards to blood pressure or demographic characteristics. The thirty hypertensives were then matched with a normotensive control group from the original survey. The follow-up showed that after only seven years, the cardiovascular health status of the thirty hypertensives from the original survey was as follows:

Two deaths from cerebral hemorrhage had occurred. One patient had hypertensive heart disease; sustained hypertension with cardiovascular and cerebrovascular complications developed in three more. Five were found to have asymptomatic sustained hypertension. Seven had hypertension not reaching levels of sustained hypertension. Only twelve had become normotensive. . . . In the normotensive control population no sustained hypertension was detected, no death occurred, and only four individuals had to be placed in the borderline hypertensive category at this time, while twenty-six individuals remained normotensive (S. Heyden et al. 1969: p. 1683).

It should be noted that no one in the study had received medical treatment for hypertension between the initial survey and the follow-up examination seven years later.

In sum, the Evans County study, which actually related cardiovascular morbidity to early blood pressure levels,

and the other studies cited above which demonstrated the tendency for high blood pressure in youth to remain high over time, clearly demonstrate the importance for health of blood pressure during youth.

While blood pressure, cholesterol, smoking, and obesity during youth all appear to predict subsequent cardiovascular morbidity, this study will be focused primarily upon the determinants of juvenile blood pressure levels. There are basically two reasons for choosing to focus upon blood pressure rather than the other cardiovascular risk factors in this investigation. The first is that levels of blood pressure and rates of hypertension in a population have long been thought to be related to psychosocial stress. As will be discussed below, social scientists have often used blood pressure as a somatic indicator of social and psychological pressures in a manner not unlike the meteorologist's use of the barometer to determine atmospheric pressure. In this study the validity of undertaking this type of exercise will be examined both in general terms and in the specific context of the adolescent population of Corpus Christi. The second reason for choosing blood pressure as the primary focus of analysis is its relative ease of measurement. Since it does not require the use of needles and is otherwise a noninvasive measurement, it is possible to obtain repeated measurements on large numbers of people. As will be discussed below, this enhances the reliability and validity of the measurements.

The Physiologic Determinants of Blood Pressure

A common definition of blood pressure is the pressure or force of blood within the arteries. Actually, this definition refers to the most commonly measured blood pressure: systemic arterial blood pressure. In fact, blood pressure may be measured anywhere within the body. For example, a cardiologist could measure the pressures within the four chambers of the heart, or the blood pressures in the pulmonary arteries leading from the right ventricle to the lungs. This is done by the insertion of a catheter into a vein or artery and directing it through the circulatory system to the desired point. The pressures in the heart and the pulmonary arteries will be different from the systemic arterial pressure. Although the systemic arterial pressure can also be measured with a catheter, it is generally measured indirectly with a sphygmomanometer (blood pressure cuff) that is most often placed over the brachial artery of the arm.

The most fundamental determinant of blood pressure is the pumping action of the heart--or, more specifically, the pumping of the left ventricle. With each contraction of the left ventricle, a wave of blood is pumped through the aorta to all of the arteries, and from the arteries to each cell of the body. The pressure measured in the brachial artery at the time of left ventricular contraction (systole) is the first of the two numbers that are used to express blood pressure, and is called

the systolic pressure. The pressure that is recorded in the arteries between the contractions of the left ventricle is the second number used to express blood pressure--the diastolic pressure. The systolic pressure is higher than the diastolic due to the sudden increase in arterial blood volume resulting from the left ventricular contraction (Loggie 1971).

There are very many neurological, hormonal, and other physiological factors which determine one's blood pressure at any given point in time. The pressures within the arteries are constantly changing in unison with other physiological parameters, and in response to ever-changing internal and external environmental demands. In general terms, the physiological determinants of blood pressure can be expressed in a simple formula called Poiseuille's Law: $\text{Blood Pressure} = \text{Cardiac Output} \times \text{Peripheral Resistance}$. Cardiac output, or the volume of blood that is pumped by the heart, depends on (1) how fast the heart beats (heart rate or pulse rate), and (2) the amount of blood that is pumped with each contraction of the left ventricle. Peripheral resistance to blood flow is determined by (1) the amount of area that the blood has to flow through (i.e., the circumference and elasticity of the arteries) and (2) the viscosity of the blood. Both momentary elevations in blood pressure and permanent levels of high blood pressure--or hypertension--can only be caused by unusually high cardiac output, unusually high peripheral

resistance, or both high cardiac output and high peripheral resistance (Brod 1971).

It has long been known that most cases of hypertension are characterized by high peripheral vascular resistance rather than an increase in cardiac output (Pickering 1936). On the other hand, momentary rises in blood pressure accompanying physical activity, or emotions such as fright or anger, are characterized by increased cardiac output, with little or no increase in total peripheral vascular resistance (Stead et al. 1945). Arteries of the heart and brain, and of the arms, legs, and torso muscles dilate to accommodate increased blood flow accompanying actual or anticipated physical exertion, as in fighting an opponent or fleeing from danger. While vascular resistance in these arteries actually decreases, resistance in the arteries of the viscera (e.g. kidneys, gastrointestinal tract) increases so as to direct blood to other parts of the body where it is more urgently needed. These hemodynamic reactions to environmental stimuli are mediated by the secretion of the so-called stress hormones (e.g. adrenalin, noradrenalin) and the activation of the sympathetic nervous system. Together these physiologic changes are called the defense--alarm response (Folkow and Rubenstein 1966; Henry and Cassel 1969).

It is believed that the defense-alarm response is part of a phylogenetically old reaction, coordinated at the hypothalamic level, whose adaptive function is to

prepare the organism to respond to threat by active resistance (fighting) or immediate withdrawal (flight) (Henry and Cassel 1969; Gutmann and Benson 1971; Brod 1971).

Researchers have identified a particular portion of the hypothalamus common to all mammals that appears to coordinate the defense alarm-response. Direct stimulation of the portion of the hypothalamus has been shown to cause increased cardiac output, muscle vasodilation and pilo erection in cats (Abraham et al. 1971). Electrical stimulation of the hypothalamic defense area in other mammals has led to reactions ranging from mild alerting to more elaborate behavioral sequences associated with fighting or flight.

It has been suggested as early as 1917 that psychosocial stress could play a role in the genesis of essential hypertension. A pronounced tendency toward hypertension had been noticed among combat soldiers (Graham 1945) long after they emerged from battle. Also, the prevalence of hypertension has been found to be greater among persons who have experienced traumatic events such as the Texas City port explosion (Ruskin et al. 1948). Despite such findings, many researchers have doubted that momentary blood pressure elevations associated with emotional arousal have much to do with the development of essential hypertension. In 1945, however, researchers demonstrated that rats developed permanent hypertension when exposed to the stress of long-lasting noise (Medoff and Bongiovanni 1945). Later, J. Henry, J. Meehan, and P. Stephens (1967)

conducted their classic study in which mice developed sustained hypertension under four different experimental conditions. In the first, one group of male mice that had not been raised together, were placed in the same box. These mice became hypertensive. A second group of the same number, which had been raised together in a box of the same size, did not become hypertensive. It was hypothesized that the change from a familiar to a strange social environment was the key factor in the propensity of the first group to repeatedly activate the defense-alarm response, and eventually develop sustained hypertension. Other experimental conditions producing hypertension included crowding mice into small boxes, chronic threat from a predator (cat), and chronic territorial threat created by an interconnected box system. Prolonged blood pressure elevations have also been produced in monkeys by exposing them to the threat of electric shock if they did not perform a complex shock avoidance schedule over periods of twelve to fifteen hours per day (Forsyth 1968). Jan Brod (1971), Mary Gutmann and Herbert Benson (1971) have cited numerous other experiments with rats, dogs, cats, and monkeys with results consistent with the position that permanent blood pressure elevations can be caused by extended exposure to stressful environmental stimuli.

In order to explain the physiologic means by which repeated activation of the defense-alarm response leads to permanent blood pressure elevations, researchers later

examined the hemodynamics of both temporary and permanent blood pressure elevations in animals involved in the types of experiments mentioned above. In 1969 R. P. Forsyth produced sustained hypertension by placing chained rhesus monkeys in a shock-avoidance conditioning program. Forsyth found that the sustained hypertension of these monkeys was due to increased cardiac output, with increased vascular resistance in the viscera and decreased resistance in the muscles, resulting in little change in total peripheral vascular resistance. This hemodynamic pattern is identical to that of a temporary blood pressure elevation. Similar results were obtained by Benson et al. (1969) with squirrel monkeys.

In order to determine whether the repeated activation of the defense-alarm response is the cause, or even a cause of sustained hypertension in humans, researchers began to study in detail the development of hypertension from its earliest stages. Brod (1971) and Stevo Julius (1964) have postulated that the first stage of hypertension is characterized by hyperkinetic circulation, extreme lability, and hyper-responsivity of blood pressure to environmental stimuli. According to Brod:

In the early stages of essential hypertension, the high blood pressure is due to an increased cardiac output, while total peripheral vascular resistance is in the normal range. Moreover, the distribution of the cardiac output during the resting state in hypertensive subjects, irrespective of their overall hemodynamics, is the same as normotensive subjects in an acute emotional state: there is vasoconstriction in the kidneys, in the splanchnic region, and partly

also in the skin; and the cardiac output is preferentially supplied to the muscles, where the vascular resistance is at the lower border of the normal range or below it [Ibid., p. 314].

According to Brod, it is not until later in the development of hypertension that total cardiac output returns to normal, or even below normal levels, and total peripheral vascular resistance is greatly increased. Thus, Brod's position is that an early period of labile blood pressure characterized by high cardiac output and a fast heart rate precedes the later period of sustained hypertension with normal or low cardiac output, and high peripheral vascular resistance. For Brod, Gutmann and Benson, and Henry and Cassel, the early period of high cardiac output is the proverbial "missing link" explaining the hemodynamic relationship between the transient blood pressure elevations of the defense-alarm response and sustained hypertension.

More recently, however, physiologists have been questioning the theory that hypertension begins with a stage of high cardiac output, and extreme lability. Indeed, when one examines the evidence presented by Brod et al., there is only a slight tendency, that is not even statistically significant, for early hypertensives to have a higher cardiac output than normotensives. In an ongoing study of the hemodynamics of hypertension among adolescents in Dallas, Texas, even the slight tendency towards high cardiac output among early hypertensives cited by Brod could not be confirmed. Early hypertensives did, however, tend to have a somewhat faster heart rate than a normotensive control

group (Laird, personal communication). Recent evidence has forced at least one researcher, Stevo Julius (1977), to change his mind on the subject, and prompted a special panel on blood pressure control of the American Academy of Pediatrics to conclude that although there appears to be a tendency for a few early hypertensives to manifest a hemodynamic pattern similar to that of the defense-alarm response, it is certainly not warranted to conclude that all hypertensives pass through an early phase of hyperkinetic circulation or extreme lability (Blumenthal et al. 1977).

Despite the inconclusive physiologic evidence associating the hemodynamic pattern of the defense-alarm response with the pathogenesis of hypertension in humans, evidence from animal experiments and the repeated observation of an association between stressful experiences and prolonged periods of high blood pressure have reinforced the belief of most researchers that psychosocial stressors must be related to hypertension at least some of the time. Two major problems remain to be solved. The first task is to identify how and under what circumstances psychosocial stressors may permanently affect blood pressure levels; the second is to determine how important a determinant of hypertension is psychosocial stress in comparison to other factors--e.g., obesity, salt intake.

The Defense-Alarm Response, Hypertension, and the Environment of Evolutionary Adaptedness

If there is some validity to the position that the repeated activation of the defense-alarm response leads to

hypertension, but yet the defense-alarm response is an evolved, adaptive mechanism, why are hypertension and its sequelae more prevalent in some populations than in others? The fundamental explanation given by the proponents of the psychosocial causation of hypertension (Brod 1971); Gutmann and Benson 1971; Henry and Cassel 1969) is that many of the human environments of the contemporary world are essentially different from the types of environments in which the defense-alarm response evolved and had adaptive value. That is to say, the environments in which hypertension is more prevalent are the most dissimilar to the environment of evolutionary adaptedness.

The hypothalamic defense reaction, with its autonomic and behavioral components, derives from early phylogenetic origins, and may have had considerable evolutionary significance. A pressor response in environmental situations requiring continuous behavioral adjustment may have been genetically selected and is now quite prevalent. The pressor response has persisted into modern life which offers many threatening situations requiring behavioral adjustment, but inhibits its visible motor sequelae of fighting or running. . . . The evolutionary visceral responses suitable then are inappropriate now and lead to a hypertensive response which is injurious to health [Ibid. Gutmann and Benson 1971:550].

If we accept as a working hypothesis that environments in which hypertension is prevalent differ from Homo sapiens' environment of evolutionary adaptedness in a way relevant to the causation of hypertension, what specifically are the factors involved? Let us examine some explanations that have been offered.

Hypertension: A Disease of Civilization

The statement by Gutmann and Benson is an example of the hypothesis that modernity or "civilization," itself, is THE cause, or at least A cause of hypertension. The presumption is that "civilization" necessarily differs from the environment of evolutionary adaptedness in that a physical response to threat or challenge is seldom appropriate in modern society. The body prepares itself for action by, among other things, a rise in blood pressure; but when action is routinely inhibited, the blood pressure remains high. One way that has been used to evaluate the veracity of this hypothesis is to compare the range of blood pressures found in "primitive" and "modern" societies. Frederick Epstein and Robert Eckoff (1967) reviewed a number of surveys of blood pressure around the world and found that, with some exceptions, blood pressures of peoples in modern, industrial societies were generally the highest. The blood pressures of pastoralists and agriculturalists in developing nations were lower, and they also were likely to rise with age, as is the case with Europeans and North Americans. The blood pressures of urban peoples in developing countries, however, tended to be as high, or nearly as high, as Europeans and North Americans. The following is a list of populations with low blood pressures (Epstein and Eckoff 1967:158):

- Caracas Indians (Lowenstein)
- Thailand (ICNND)
- Ethiopia (ICNND)

Bushmen of South Africa (Kaminer)
 Ugandan nomads (Shaper)
 India, urral (Padmavati)
 Vietnam (ICNND)
 India, urban workers (Padmavati)
 Uganda, semi-nomads (Shaper)
 New Guinea (Whyte)
 Gilbertese (Maddocks)

These populations, in contrast have been found to have high rates of hypertension:

Georgia, Whites (Constock)
 Chile (ICNND)
 Indians in Fiji (Lovell)
 Jews who have migrated from the Atlas Mountains to
 Israel (Dreyfus)
 Urban Zulu (Scotch)
 Ugandan villagers near Kampala (Shaper)
 London (Pickering)
 Wales (Miall)
 Georgia Blacks (Comstock)
 Bahamas
 Bergen, Sweden (Boe)
 Georgia Blacks (McDonough)

Due to differences in the technique of measuring blood pressure, there are limitations to the comparability of these various surveys. Nonetheless, it is apparent from these two lists compiled by Epstein and Eckoff that there is a tendency to find more studies conducted in modern societies in the high blood pressure list, while studies conducted in rural, underdeveloped areas are most often found in the list of low blood pressures. There are certain exceptions, however, such as the Ugandan villagers studies by Shaper (1967), and the Indian population of Fiji.

Adrian Ostfeld, like Brod, believes that urban or modern societies are more likely to repeatedly evoke the pressor, or defense-alarm response, than are "primitive"

societies. Ostfeld and Richard Shekelle (1967) cite four circumstances which commonly evoke a pressor response:

(1) when there is uncertainty as to the outcome of an important event; (2) when there is a possibility of physical dangers; (3) when fighting or flight are inappropriate responses to threat; (4) when constant vigilance is necessary. They believe that these circumstances arise less frequently in "primitive" societies where kinship and tradition supposedly remove ambiguity and uncertainty from social interaction. The complexity of modern society makes life less secure.

In short, the traditional, well-defined social roles characteristic of more primitive societies have been disrupted in urban life. . . . There has been an appreciable increase in uncertainty of human relations as man has gone from the relatively primitive and more rural to the urban and industrial. Contemporary man in much of the world is faced every day with people and with situations about which there is uncertainty of outcome, wherein appropriate behavior is not prescribed and validated by tradition, where the possibility of bodily or psychological harm exists, where running or fighting is inappropriate, and where mental vigilance is called for [Ostfeld and Shekelle 1967: 329].

Although it does indeed appear that, on the average, blood pressures are higher in modern, urban, or industrial societies (as they variously have been described), to claim that "civilization" causes hypertension is a gross oversimplification to which there are many anomalous cases. As H. Geiger and Norman Scotch have noted, because of its lack of specificity as to causation and many exceptions, this hypothesis has contributed little to the social epidemiologic understanding of hypertension. Other investigators,

including the epidemiologist Leonard Syme (Shapiro et al. 1979), remain unconvinced that the general tendency toward lower blood pressures in "primitive" societies is attributable to a lack of stress or to the stability of social roles. Ethnographic studies of societies such as the Dobu by Reo Fortune, Napoleon Chagnon's study of the Yanomamo, and Collin Turnbull's controversial study of the Ik lend anthropological support to Syme's suspicions. One gets the impression that Brod, Ostfeld, and Gutmann and Benson believe that the "noble savage" typifies the populations of underdeveloped areas, and that life has remained untouched by the "corrupting forces" of civilization. In contrast, Syme believes that the tendency for "primitive" societies to have lower blood pressure can just as plausibly be explained by a lower prevalence of obesity, a higher prevalence of debilitating parasitic infections, smaller body build, and lower salt consumption.

Culture Change and Incongruity

While the hypothesis that civilization itself is a cause of hypertension remains a prominent part of the folk understanding of hypertension, it has only occasionally been a post factor explanation in scientific research (Brod 1971) and has seldom, if ever, been a working hypothesis of an original investigation. A more popular hypothesis regarding the sociocultural causation of hypertension was articulated by Henry and Cassel (1969:190). According to them, elevations in blood

pressures do not depend on the presence or absence of a high state of technology and social sophistication, (but) rather it appears to turn on the issue of whether the society or group in question has an established tradition with a social structure which remains unchallenged during the lifetime of its oldest subjects. It is during childhood, adolescence, and early adult life that society inculcates its value systems. Stress develops when the aging individual finds himself or herself in a social milieu to which it is hard to adapt because these values are not supported. Typically, this occurs after a social or cultural revolution or when he is away from his homeland [Ibid. 190].

T. Smith (1966) has argued that modernity is generally associated with sociocultural change, while "primitiveness" and traditionalism are usually associated with stability. She claims that it is for this reason there is confusion as to the social determinants of hypertension. A number of studies of the blood pressures of geographically mobile individuals have been conducted (Cassel 1975). Some of these studies suggest that moving from a rural, relatively primitive environment to a modern, urban environment is what causes high blood pressure. Most of these studies, however, are consistent with the position that a change of social environments--irrespective of urbanity or modernity--leads to higher blood pressure.

Jeremiah Stamler et al. (1967) have demonstrated that Blacks who had migrated from the rural South to Chicago had higher blood pressures than Blacks who were born in Chicago. Another study (Florey et al. 1968) showed that a population that had migrated from the Cape Verde Islands of West Africa to the East Coast of the United States within the last 100 years had higher blood

pressures within each age/sex cohort than did the natives of Cape Verde. Ricardo Cruz-Coke et al. (1964) found that Polynesians living on Easter Island had lower pressures than a genetically similar group of Polynesians that had migrated to Chile. In another study, A. G. Shaper (1967) found that nomadic Samburu men in their own cultural environment had exceptionally low blood pressures. When Samburu men who had joined the Kenyan army were compared to age matched controls in their native setting, the men who had joined the army had much higher pressures. In a review article on the subject of hypertension among migrants, Cassel (1975) concluded that practically all studies of the blood pressures of migrants tend to support the hypothesis that a change in cultural environment leads to stress-induced hypertension.

Although the findings of these migration studies are consistent with the sociocultural change and incongruity hypothesis, studies of migrants cannot be considered sufficient to definitively identify the reasons for the apparent blood pressure changes. It is entirely possible that individuals who became migrants may have been poorly adapted to their social environments in the first place, and may have had higher blood pressures from the start. Also, the challenge of adaptation to a new social environment is not the only factor which may contribute to hypertension and which is associated with geographic mobility. A change in dietary and exercise habits might also be expected among migrants.

Another way to examine the hypothesis relating cultural change or incongruity to hypertension is to study geographically stationary people whose culture is changing around them. Two such studies have been conducted on the Micronesian Islands of Ponape and Palua (Patrick 1974; LaBarthe 1973). Both islands are populated by racially and culturally homogeneous peoples who have had an almost identical history of culture contact and colonization by the Spanish, Germans, Japanese, and Americans during the last 100 years. It is believed by the researchers that life has changed most in the urban areas of both islands and least in the rural areas. The distributions of blood pressures on the two islands, however, were found to be quite different. The blood pressures on Palua are consistent with what would be expected by the culture change hypothesis. The pressures were lowest in the rural areas and highest in the urban areas that had experienced the greatest changes. Average blood pressures also rise consistently with age in the cities, but not in the rural areas. In contrast, Ponape demonstrated none of the expected trends. There was no clear rural to urban gradient of pressures, nor were the pressures of the older people much higher than the younger.

In a similar study, H. Tyroler (1965) examined the blood pressures of Papago Indians living in what were judged to be "traditional," "transitional," and "modern industrial" villages. It was hypothesized that Papago

living in "modern, industrial" villages would experience the greatest amount of cultural incongruity, and persons living in "traditional" villages would experience the least. Further, it was hypothesized that incongruity would be directly associated with blood pressure. For whatever the reason, Tyroler did find that the average blood pressures of the three villages did vary in the manner that was predicted. In sum, although the results of studies relating hypertension to cultural change are not unanimous and cannot be considered definitive, they do indicate that cultural change or incongruity is often related to high blood pressure.

Social Disorganization

A third hypothesis relating sociocultural factors to blood pressure is that social disorganization causes the chronic activation of the defense-alarm response and eventually leads to the development of hypertension. In the first study of blood pressure by an anthropologist, Norman Scotch (1957) compared the blood pressures of Blacks in the Virgin Islands to the pressures of the Cuna Indians of Panama. On the basis of library research, Scotch characterized the social structure of the Virgin Island Blacks as being rife with social disorganization, while that of the Cuna was said to "lead to relative personal and cultural adjustment" (1957:113). Scotch argued that this difference in the level of social disorganization in these two societies explains why the Virgin Island Blacks

have higher blood pressures. Scotch also examined the blood pressures of the Washo Indians of Nevada. He found that attendance of White-run schools and alcoholism were associated with high blood pressure. He argued that both of these characteristics were related to stress and to the breakdown of social norms.

Ernest Harburg et al. (1973) conducted a "socio-ecological" survey of blood pressure in neighborhoods of Detroit judged to have either a low or high number of stressors. Neighborhoods were categorized on the basis of a composite score of socioeconomic and so-called social instability variables. The following socioeconomic characteristics were considered: median income; median educational level; percentage of the population unemployed; percentage of the population owning their own homes; and the percentage of the population in professional and managerial jobs. Instability variables included: adult crime rate per 10,000; marital instability and percentage of the population in residence five years or more. Race, age, sex, and body build were statistically controlled. The authors found that, consistent with their hypothesis, "high stress" neighborhoods had a significantly higher percentage of residents with borderline and sustained hypertensive residents than did the low stress neighborhoods. A similar study was conducted comparing mortality rates from stroke in areas of North Carolina with high and low levels of family instability (Neser, Tyroler and Cassel 1971; James

and Kleinblum 1976). Stroke is known to be strongly associated with hypertension. Consistent with Harburg's findings, the North Carolina study also demonstrated the expected relationship between social disorganization and hypertension-related mortality.

C. D. Jenkins et al. (1979) recently conducted yet another study relating hypertension and other causes of mortality to indices of SES and social disorganization. This study, conducted in Boston, showed that hypertension was more likely to be listed as a cause of death on death certificates issued in census tracts with the following characteristics: males had low occupational status; there was a low level of schooling; low income; overcrowded housing; many broken families. Age, sex, and race were statistically controlled. Because these characteristics listed above were found to be associated with an overall high mortality rate, it was thought that psychological and social stress associated with poverty and social disorganization might be implicated in all causes of death--not just those related to hypertension. Such a finding would be consistent with Selye's model of the general adaptation syndrome in which environmental pressure may cause many nonspecific reactions within the organism associated with ill health. It was found, however, that only certain causes of death were, in fact, strongly associated with the same socioeconomic and social disorganization variables. These causes of death included ischemic heart disease (hypertension

related), homicide, and deaths caused by fires. Many other diseases, such as the respiratory diseases, were not found to be associated with these characteristics. Thus, Jenkins et al. concluded that there appear to be factors associated with poverty and social disorganization that specifically promote hypertension-related mortality.

Recently, the anthropologist William Dressler (1979) tested the hypothesis relating high blood pressure to social disorganization among Blacks on the Carribean Island of St. Lucia. It had long been argued by many researchers that Afro-American patterns of mating and family organization represent a form of social pathology and reflect the failure of Blacks to conform to prevailing social norms. Daniel Moynihan (1965), for example, has argued that the high rate of poverty and unemployment among Blacks is primarily explained by the disorganization of the Black family. The studies by Scotch, Tyroler and Cassel, and Harburg also presume that the lack of permanent matings is pathological in that it is supposed to promote psychosocial stress, and eventually a somatic manifestation of stress-hypertension. In contrast, Nancie Gonzales (1970) has argued that the mating patterns and family organization of Afro-Americans are, in fact, socially adaptive in light of scarce economic resources. On St. Lucia, Dressler found that multiple matings were not associated with higher blood pressures and, therefore, were assumed not to be indicative of social pathology, disorganization, or psychosocial stress. Of all the social

and demographic variables examined by Dressler besides age, only one was found to be associated with blood pressure: that variable was multiple matings. The more matings there were, the lower the blood pressure. Thus, contrary to the conclusions of Jenkins, Tyroler, Scotch and Harburg, Dressler concluded that multiple matings are not indicative of social disorganization--at least among the Blacks of St. Lucia--and Dressler cites low blood pressures as proof of this.

It is indeed curious that Dressler would claim that multiple matings are indicative of successful social adaptation, and cites low blood pressure as proof, while other researchers have claimed just the opposite. One wonders whether the studies which have claimed to identify causal relationships between blood pressures and indices of social disorganization or cultural change are in fact valid, or whether such associations are spurious. How can one know whether modernity, urbanity, culture change, or certain forms of family organization are in fact causative of psychosocial stress? Even if certain social characteristics were to be proven to have caused psychosocial stress, how can one know that blood pressure is actually a function of this process?

The Articulation of Sociocultural, Social Psychological and Somatic Levels of Analysis

S. Stahl et al. (1975) have categorized most epidemiologic and social epidemiologic studies such as those previously described as structural studies. The structural model, according to Stahl, attempts to associate a dependent variable such as blood pressure with a

particular type of social structure of characteristic such as low socioeconomic status, social disorganization, modernity, or sociocultural change. Studies that have attempted to associate personality types to blood pressure also have been categorized by Stahl as examples of structural investigations. Although the concept of the hypertensive personality is widely disputed (Shapiro et al. 1979) a number of studies have related personality characteristics such as submissiveness and repressed emotions--especially hostility--to high blood pressure (Kalis 1961; Harris and Singer 1968; Thomas 1967). Both Stahl and Richard Lazarus (1978) have criticized the structural approach as it is applied to both straight, biomedical epidemiology and to the social epidemiology of researchers such as Cassel. The problem with the structural approach, as seen by Lazarus and Stahl, is that it cannot explain the significance of structural characteristics for the perception and experience of one's surroundings and oneself. For example, it is presumed in structural studies that sociocultural change causes psychosocial stress, and that this stress, in turn, causes maladaptive physiologic responses such as hypertension or coronary heart disease (Bruhn et al. 1966; Stamler et al. 1967). In contrast, Stahl favors a more phenomenological approach to the study of blood pressure. In commenting upon structural studies focusing upon sociocultural incongruity, Stahl states:

Researchers using the structural concept have found that status incongruent persons have higher prevalence rates of hypertension than do status congruent persons. As expected, the results are not consistent.

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It is proposed here that only persons who view their incongruity as problematic for everyday encounters, problematic to their definition of self or goal attainment, are likely to adapt to the incongruity by the physiologic behavior called hypertension. That person who is either unaware of, or not bothered by this incongruity, has no reason to so adapt [Stahl et al. 1975:35].

Ethnographic and psychological research, if done in conjunction with the investigation of social structural and physiological variables such as blood pressure, could help to resolve some of the apparent discrepancies in research findings. For example, why did Jenkins and Harburg conclude that a lack of family stability caused hypertension while Dressler's conclusion was just the opposite? As argued by Dressler on the basis of his and other's ethnographic research, multiple matings are more indicative of an expanded social support system than of social pathology in St. Lucia. It is possible (but not known) that this structural characteristic is perceived and experienced differently by the population studied by Harburg and Jenkins in Detroit and Boston. This cannot be ascertained, however, on the basis of existing evidence. If Harburg and Jenkins had utilized a processual, adaptational model that would have identified both the biological and psychosocial significance of social characteristics relevant to blood pressure, then the exact process by which social structure affects the organism could have been identified.

By their use of ethnographic methods, the anthropologists Dressler and Scotch are among the few investigators of the social determinants of blood pressure who have

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gone beyond a merely structural approach. In his study of the blood pressures of rural and urban Zulu, Scotch (1963) found that persons who had to adapt to an unfamiliar urban setting had higher blood pressures than their counterparts who maintained their customary way of life in the countryside. This finding is consistent with the structural sociocultural incongruity hypothesis, while his earlier study is consistent with the social disorganization hypothesis. Scotch, however, transcended this general level of analysis. By means of survey techniques and participant observation, Scotch determined that the urban Zulu with the highest blood pressure were those who maintained the traditional beliefs and social patterns of rural Zulu culture. The urban Zulu hypertensive was more likely to live in an extended family, use magic to explain misfortune and sickness, and retain traditional religious beliefs. In short, Scotch concluded that change from a rural to urban environment and culture was not as important a determinant of blood pressure as the peculiar social, economic, and idiosyncratic factors that determine the ability of the individual to adapt to the new urban environment.

Of all the studies of blood pressure done to date, none has yet intensively examined the relationship between sociocultural factors and blood pressure levels during youth. Epidemiologic studies of blood pressure among young people sometimes have touched upon, but never thoroughly

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examined, the possible influence of sociocultural factors. So far in this chapter studies of the relationship of sociocultural factors to blood pressure among adults have been reviewed. At this point, let us examine what is known about the relationship of social (mostly demographic) factors to the blood pressure of children and adolescents.

Studies of Blood Pressure During Childhood and Adolescence

A number of epidemiologic surveys have been conducted among children and adolescents. The advantage of such studies is that the distribution of blood pressure levels within a given population may be determined in relation to selected social and demographic variables. If the sample is properly selected, the investigator may feel confident that the findings are representative of the entire population or community in question and not just a convenience sample comprised, for example, of patients who may present themselves to a given clinician.

There are certain disadvantages associated with these epidemiologic surveys, however. The advantages of the representativeness of such surveys are balanced against limitations in the depth of information which may be obtained. In epidemiologic surveys of blood pressure, it is difficult to establish much more than correlations between blood pressure and a small number of social or demographic variables. Of course, the statistical associations which are sought in such studies should be based on hypotheses

grounded in social scientific or other theory. In contrast to epidemiologic surveys of diseases with simpler etiologies, however, it is unrealistic to expect that anything more than rather gross clues regarding social or behavioral influences may be gotten from descriptive epidemiologic surveys of blood pressure.

From the point of view of the social scientist, epidemiologic studies of blood pressure in youth have been rather unimaginative. Basically, these studies have repeatedly examined the same variables, with little effort being made to understand how social, psychological, and biological factors may affect blood pressure. The following variables are the ones most often examined in epidemiologic surveys of blood pressure in youth:

- socioeconomic status (defined in various ways)
- race
- obesity
- stress
- age
- sex

Socioeconomic Status

There are three studies which have shown an inverse relationship between the level of parental education and the blood pressures of children. After controlling for obesity, Robert Miller and Richard Shekelle (1976) found a small but statistically significant association between low levels of parental educational attainment and

elevated diastolic pressure for White tenth-grade students in Chicago. No such relationship was found, however, for Black students. The National Health Examination Survey (Weiss et al. 1973), in its study of blood pressure among children six to eleven years of age, found an inverse relationship between level of parental education and both systolic and diastolic pressures. The relationship was stronger for White children than for Black.

Despite the fact that the National Health Examination Survey revealed an inverse relationship between blood pressure and levels of parental education, the same study failed to find a relationship between family income and blood pressure. In a survey conducted in high schools in Washington, D.C., however, an inverse relationship was found between the occupational status of parents and the systolic pressures of Blacks but not Whites (Kotchen et al. 1974). Jane Kotchen, F. de Castro (1976), and Herbert Langford et al. (1968) have all found that the average blood pressure of students in poverty areas is significantly higher than the average blood pressure of students from more affluent areas. These relationships persist when the influence of race is statistically controlled. L. B. Reichman et al. (1975), however, found no relationship between the average blood pressures of students from different areas of New York City with varying levels of income. In sum, although the evidence is somewhat contradictory, there appears to be a tendency for blood pressure

to be inversely related to various indices of socioeconomic status.

Race and Blood Pressure

It is a well-known fact that Black American adults have higher morbidity and mortality rates from hypertension than do White American adults (National Center for Health Statistics 1974). There also is some evidence relating race to blood pressure during youth. Given the weakness of this relationship in some of these latter studies, however, it appears that the strength of this relationship increases with age. For example, Margaret Kilcoyne's study (1974) among high school students in New York revealed no greater tendency for hypertension among Blacks than among Hispanics and Whites. However, when students whose blood pressures were over 140 and/or 90 mm Hg. were rescreened, Black males were found to have a considerably higher rate of hypertension than others. This trend was particularly apparent among older students.

Studies by N. S. Weiss et al. (1973), Antonie Voors et al. (1976), and Kotchen (1974) show a tendency for Black youths to have higher blood pressures. The National Health Examination Survey found that the diastolic pressures of Blacks, aged six to eleven, averaged 2 mm Hg. higher than that of Whites (Weiss et al. 1973). No consistent differences were found in the blood pressures of Black and White youths, aged twelve to seventeen. Voors (1976) compared the blood pressures of 3,524 Black and White students,

aged five to fourteen, in Bogalusa, Louisiana. Two different measurement devices were used: a standard sphygmomanometer and an automatic physiometric recorder. The sphygmomanometer revealed no systematic difference between the blood pressures of Blacks and Whites. The physiometric instrument, however, revealed that there were significantly more Blacks than Whites in the highest five percentiles of the distributions of both systolic and diastolic pressures.

Kotchen's study (1974) provides the strongest evidence establishing an increased tendency toward high blood pressure for Black youths. The study showed that 10 percent of Black youths, aged seventeen to twenty, had systolic pressures over 140 mm Hg., while no White subject had a pressure that high. The strength of the relationship between being Black and high blood pressure in this study may, in part, be related to the fact that the respondents were older. As in the case of socioeconomic status, the evidence relating race to blood pressure is not without its contradictions. Nevertheless, the evidence presented above tends to support the hypothesis that there are differences in blood pressure by race and ethnicity that may be identified during youth. These differences become more apparent during late adolescence and adulthood.

Obesity

Without a doubt, the factor most consistently associated with high blood pressure during youth is obesity. All studies which have measured obesity, either by the

skinfold method (Miller and Shekelle 1976), or by calculating a body mass index (Kotchen 1974; Lauer 1975; Levine et al. 1976; Voors et al. 1976; de Castro 1976) have revealed a strong positive association with both systolic and diastolic pressures. It has been argued by some that high blood pressure readings obtained from obese individuals represent an artifact of measurement rather than an actual difference in blood pressure (McLain 1976). Although there is general agreement that the blood pressure of an obese person can easily be overestimated if the cuff that is used is too small, Voors has shown (1976) that obese individuals continue to have higher blood pressures even when a completely different kind of measurement device is used.

Age

Most studies have shown that both systolic and diastolic blood pressures tend to rise 1.5 to 2 mm Hg. per year during youth. It is believed that age, in and of itself, has no effect on blood pressure other than through increases in body size, and possibly in association with sexual maturation. All societies report rises in blood pressure during youth. Not all societies, however, report the continuing rise in blood pressure during adulthood as is characteristic of Western societies. Few societies report a rate of increase in blood pressure during adulthood as great as that which is found in the United States (Stamler 1973).

Sex

Females tend to have higher systolic and diastolic blood pressures than males between the ages of five and fourteen (Londe et al. 1971; Weiss et al. 1973; Lauer et al. 1975). By the age of fifteen however, the average blood pressures of males surpasses that of females and remains higher throughout young adulthood (Miller and Shekelle 1976; Kilcoyne et al. 1974; Kotchen 1974; Levine et al. 1976; Johnson et al. 1964).

Stress

No epidemiologic survey has yet directly examined the possible role of stress as it is related to blood pressure during youth. There has been speculation, however, as to the role of stress in at least two studies. Kotchen suspects that the stress of inner city life may account for the higher pressures which he recorded in an inner city high school in Washington, D.C., as compared to those from students at a suburban school. Similarly, Langford speculates that the stress associated with rural poverty accounts for the higher pressures of Black women who live outside of Jackson, Mississippi, as compared to those who live in the city. No direct evidence was produced, however, to back up either of these hypotheses.

Although no studies have looked directly at stress during childhood or adolescence, two longitudinal studies have examined whether stress may affect blood pressure among young adults. The follow-up study of sixty young

adults from Evans County, Georgia, who were identified as being hypertensive seven years earlier, found that the hypertensives did not differ from a normotensive control group in their responses to a questionnaire designed to measure psychological stress (Heyden 1969). In contrast, W. Harlan et al. (1973) examined in 1970 the records of 1,056 individuals who were undergoing naval flight training in 1940. The subjects underwent psychological as well as physiological testing during their initial training period. It was found that there was a weak but significant relationship between the trait of "nervousness" found in 1940 and the prevalence of hypertension thirty years later. Unfortunately neither Harlan nor Heyden mention the details regarding the social and psychological aspects of their studies. Heyden, in fact, questions the validity of his own conclusion regarding the relevance of social and psychological variables to blood pressure.

The primary contribution of blood pressure studies among children and adolescents is that they have identified relationships between various social and demographic variables and blood pressure. They have contributed little, however, to an understanding of the sociocultural and behavioral factors which may be involved in the causation of hypertension. According to Edward Suchman, the problem lies in

the essential meaninglessness of gross, demographic population categories when viewed as "causal" variables indicative of social processes. These (demographic characteristics) may be convenient, easily

studied labels for subdividing populations, but they are not dynamic social ideas and cannot, except in a very limited, superficial sense, represent the kind of social phenomena that may cause disease of anything else [Syme and Reeder 1966:110].

At best, relating blood pressure levels to demographic population categories, as these studies of youth have done, can only hint at the underlying social processes involved in the genesis of hypertension.

Even the studies that have attempted to identify the underlying social phenomena behind high blood pressure leave much to be desired. The structural studies of socio-cultural change and disorganization at least attempted to identify the social processes which are presumed to generate stress-related hypertension. However, to presume that sociocultural change or social patterns described as "disorganized" invariably or even usually produce stress, and that this stress, in turn, causes hypertension requires a leap of faith that the prudent reader may not wish to take. A more reasonable yet more difficult approach to the investigation of the causes of high blood pressure is to examine the adaptation of individuals and populations to their social and physical environments rather than merely to statistically associate certain social or psychological characteristics to blood pressure.

Cassel (1964) has criticized epidemiologic studies which have taken an exclusively biomedical approach to the causation of disease, while ignoring the social and cultural dimensions. Unfortunately, most social epidemiologic studies

may also be criticized for being equally narrow. Such studies have often tended to ignore nutrition, exercise patterns, and other nonpsychosocial factors. Clearly there is a need to combine the analysis of the biological with the psychological, social, and cultural dimensions of human adaptation in order to provide a more complete understanding of parameters of health such as blood pressure. It is to this end that the present study is directed.

CHAPTER III

METHODOLOGY

The Context of Research

During the time that this research was being conducted, I was employed by The Children's Heart Institute of South Texas. The Children's Heart Institute is staffed by an interdisciplinary team whose primary objective is to provide medical and social services to children with congenital heart defects and their families. The team is composed of a pediatric cardiologist, pediatric cardiology associates (nurse practitioners specially trained in pediatric cardiology), a psychologist, social workers, and an anthropologist. I, as the anthropologist, however, did not assume a clinical role. My responsibilities were: (1) to carry out health-related research of potential applied value, and (2) to provide cardiovascular health education. In order to carry out my responsibilities in the area of health education and to conduct my research, I assumed the role of participant observer in four Corpus Christi area high schools. The four schools chosen for this study were selected in such a way as to provide a clustered probability sample of the adolescents of the

Corpus Christi area. The four schools and all individuals referred to in this study are given pseudonyms so as to protect the identities of persons participating in the study.

In each of the four schools I taught a two-week unit on cardiovascular health to a minimum of five and a maximum of thirteen sections of health classes of approximately thirty students each. In order to work with all available students taking the required health courses, I spent at least three months working in each school. I worked an additional six months in two of the schools with students who were trying to lose weight. Working in the schools proved to be an effective means of gathering information for this study. It provided the opportunity to collect quantitative survey data on a large number of adolescents who were generally representative of the adolescent population of Corpus Christi. At the same time, it allowed for lengthy observation and much personal contact between the researcher and many of the students and teachers. The strategy of combining in this manner the quantitative methods which underlie biomedical and "structural" (Stahl et al. 1975) epidemiologic studies with anthropological methods has the potential to yield an understanding of the influences upon human blood pressure that benefits from both research traditions. The anthropological investigation of the complex interface of culture and health-related behavior complements the precision of standard

epidemiologic techniques to produce a more complete investigation of the research problem.

The Study Population

A total of 899 students participated in this study. Each of the students was asked to define his or her ethnic identity. The results are in table 1. The ethnic composition of the study population is very similar to that of Nueces County as reported in the 1970 census and presented in table 2. Data presented in table 2 were obtained by examining the ethnic breakdown of residents of Nueces County who were between five and nine years of age in 1970. This cohort had reached the ages of thirteen to seventeen years in 1978. Ninety-seven percent of the students in this study were in this age range.

TABLE 1

ETHNIC BREAKDOWN OF PARTICIPANTS IN THIS STUDY

Ethnic Identity	Number	Percentage
Mexican-American or Chicano ...	548	61%
Anglo-American	306	34%
Black-American	36	04%
Other	9	01%
Total	899	100%

TABLE 2

ETHNIC BREAKDOWN OF THE POPULATION OF NUECES COUNTY,
AGES FIVE TO NINE IN 1970, EXTRAPOLATED TO 1978,
AGES THIRTEEN TO SEVENTEEN--BY PERCENTAGE

Spanish Surname*	56%
White, Non-Spanish Surname**	39%
Black	05%
Total	100%

SOURCE: 1970 Census

NOTE: This method of extrapolating 1970 Census Data on persons five to nine years of age to estimate the ethnic breakdown of persons thirteen to seventeen years of age in 1978 was the only means available. Information from this study suggests that there has been somewhat more in-migration to the area by Anglos and Blacks than by Mexican-Americans. No information is available on out-migration.

*The great majority of Spanish-surnamed persons in Nueces County are Mexican-American.

**This figure was calculated by subtracting Spanish-surnamed and Black persons (for whom separate census data were enumerated) from the total population of Nueces County in this age range. It would also include most persons categorized as "other" in my data.

There is considerable diversity in the adolescent population of the Corpus Christi area, not only among ethnic groups but within ethnic groups as well. Many of the Mexican-American youths, especially the more affluent and those living in integrated neighborhoods, speak little or no Spanish. Other Mexican-American youths retain Spanish as their primary language and maintain many more cultural

characteristics distinct from those of the Anglo population. As will be discussed below, the differentiation of the English speaking and Spanish speaking Mexican-American youths will be important in the analysis of the data from this study. There are other subcultural distinctions that should be made as well. Some of these subcultures, many of which cut across ethnic boundaries, include: "cowboys," "jocks," "socialites," "surfers," "freaks," and "book worms." The four schools chosen for this study were selected to represent the range of cultural and subcultural differences found among the youths of the Corpus Christi area.

The four schools also provide a fairly representative sample of the socioeconomic groups of Corpus Christi. Youths from lower, middle, and upper income neighborhoods attend these schools. Although no data were collected on the incomes of families of students participating in this study, information was collected from the students on the educational attainment of their parents and is presented in table 3. Information on level of parental education can be used as a rough indicator of socioeconomic status. The data collected in this study on parental education are categorical and reflect a range of years of schooling completed. Students were asked to indicate the highest level of schooling completed by either of their parents. It is therefore expected that these figures will be slightly higher than the average number of years of schooling completed by both parents.

TABLE 3
HIGHEST LEVEL OF SCHOOLING COMPLETED BY PARENTS OF
STUDENTS PARTICIPATING IN THIS STUDY

Ethnic Identity	Less than six		Seven to eleven		High school		Post-high school		College degree		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Mexican- American	139	33.6	148	35.7	59	14.2	45	10.9	23	5.6	414	60.0
Anglo- American	3	1.2	20	8.0	62	24.9	78	31.3	86	34.5	249	36.1
Black	1	3.7	4	14.8	11	40.7	8	29.6	3	11.1	27	3.9
Total	143	20.4	172	24.9	132	19.1	131	19.0	112	16.6	690	100.0

The information on the education of the parents of students participating in this study can be compared to data on schooling from the 1970 Census. This is presented in table 4.

TABLE 4

MEDIAN NUMBER OF YEARS OF SCHOOLING FOR PERSONS
TWENTY-FIVE YEARS AND OLDER IN NUECES COUNTY

Spanish Surname	7.0 years
White, non-Spanish Surname*	14.9 years
Black	10.2 years
Total	11.8 years

SOURCE: 1970 Census

*The census does not enumerate data for non-Spanish surnamed Whites. This figure represents the mean number of years of schooling completed. It was calculated by subtracting the figures for Hispanics and Blacks from the total for Nueces County. The figures for Hispanics and Blacks were weighted according to the percentage of the total population of the county over age twenty-five which they represent.

The parents of Mexican-American students in this study have the lowest level of schooling, with almost 70 percent not having completed high school. This is consistent with the census data showing that the median level of education for Mexican-Americans twenty-five years and older is seven years. The parents of Black students in the study appear to have a somewhat higher level of education than the 10.2 year median listed in the census. The mean

level of education for Anglos, as derived from the census, appears to be comparable to that of the study population. Sixty-five and eight-tenths percent of the parents of Anglo students are reported to have more than a high school education. It is probable that the current median level of education of persons twenty-five years of age and older is somewhat higher than that indicated by the 1970 Census. Upon questioning, school officials have indicated that during the past decade school attendance, especially by minorities, has greatly increased.

Another question regarding the representativeness of the study population of the Corpus Christi area is related to the fact that not all adolescents in this age range go to school. According to the 1970 Census, 86.8 percent of sixteen and seventeen year olds were enrolled in school. It is likely that today over 90 percent of Nueces County adolescents in this age group are enrolled in school.

In order to participate in this study, students were required to sign, and have one of their parents or guardians sign, a statement of informed consent. Although there are no records of persons who did not submit a statement of informed consent, it is estimated that from an average size class of 30 students, two or three would not participate in the study. Thus, 90 percent to 95 percent of available students agreed to participate in the study. Upon questioning students and teachers, it is believed that

few of the persons who did not submit a statement of informed consent did so for reasons other than forgetfulness. As was mentioned, the study was conducted primarily in the context of the required health classes. In three of the four schools, all students taking health during the school year in which the study was conducted had the opportunity to participate in the study. In the other school, approximately two-thirds of all students taking health had the opportunity to participate in the study. Due to school policy it was not feasible to work with the remaining students. On the basis of questioning teachers and students at this school, there appeared to be no basis for the assignment of students to the various sections of health other than by chance.

One final question regarding the representativeness of persons participating in this study related to the rate of attendance at school of enrolled students. For each of the various questionnaires, blood pressure measurements and other anthropometric measurements, 15 percent to 20 percent of the students who had agreed to participate in the study did not submit information due to absence from school.

The Schools

Plainview High School. The students at Plainview High School are, on average, the poorest of all adolescents participating in this study. The great majority of students attending Plainview reside in two census tracts.

According to the 1970 Census, the median income for families and unrelated individuals in these two census tracts was approximately \$4,800, as compared to a median income of \$6,938 for all of Nueces County. Another economic indicator pertaining more directly to the families of students participating in this study is the percentage of students who qualify for free or reduced cost lunches under the federal school lunch program. Only 1.5 percent of students at Plainview do not qualify for the subsidized lunch program. Three percent pay a reduced fee. Ninety-six and five-tenths percent of Plainview students were eligible to receive lunch at no cost. As for the ethnic composition of Plainview High School, 91 percent are Mexican-American, 7 percent are Anglo, and 2 percent are Black.

Central High School. Central High School is the most integrated of the four schools participating in the study, both in terms of ethnicity and class. Sixty-one percent of the students are Mexican-American, 36 percent are Anglo, and 1 percent are Black. The Central High School district includes one of the highest income areas in the city, which is almost entirely Anglo, as well as a poor neighborhood that is overwhelmingly Mexican-American. Most students attending Central, however, come from integrated, middle-income areas. In contrast to Plainview, only 15 percent of Central High School students are eligible to receive a free or subsidized lunch. Only

8 percent of students at Central High actually receive free or reduced-cost lunches. According to the director of the cafeteria, many of the students who are eligible for the subsidized lunch program do not take advantage of it so as not to be shamed by their peers.

Sam Houston High School. Sam Houston High School is located in a rapidly growing outlying section of Corpus Christi. Most students live in scattered subdivisions or in a semirural environment. Eighty-four percent of Sam Houston students are Anglo, 15 percent are Mexican-American, and 1 percent are Black or "other." Many of the parents of the Anglo students work as engineers, technicians, or supervisors at nearby petrochemical plants or in other occupations requiring technical training. The 1970 median income in two census tracts that roughly correspond to the high school district was approximately \$10,500. Most of the Mexican-American students at Sam Houston High School are not so affluent, however. Twelve and five-tenths percent of Sam Houston students are eligible to receive free or reduced-cost lunches. Ninety percent of these students are Mexican-American. Unlike most Mexican-Americans at Central High School, most Mexican-Americans at Sam Houston reside in a neighborhood separate from the residences of most Anglos.

Laguna High School. The student body of Laguna High School is very similar to that of Plainview High. In

1970, the median income in two census tracts roughly corresponding to the Laguna High School district was approximately \$5,100. Eighty-nine percent of the students at Laguna are eligible for free or reduced-cost lunches. As for the ethnic composition of Laguna High School, there are more Blacks and fewer Anglos than at Plainview. Seventy-five percent of the students are Mexican-American, 24 percent are Black, and 1 percent are Anglo.

Analytical Categories of Corpus Christi Adolescents

For the purposes of comparison and statistical analysis, students participating in this study may be grouped into four categories: Anglos, Spanish-speaking Mexican-Americans, English-speaking Mexican-Americans, and Blacks. Regarding Anglos, it is apparent from the brief description of the four schools presented above that almost all Anglos who participated in the study attended relatively affluent Sam Houston and Central High Schools. Only 6.8 percent of Anglo families in Nueces County had incomes below the federal poverty guideline in 1970. The percentage of Anglo students from low-income families in this study appears to be even lower. Subcultural differences in the Anglo population will be described; but for the purpose of statistical analysis, Anglo students in this study will be considered as one unit.

In contrast to the Anglo population, a pattern of social differentiation related to socioeconomic status was readily identifiable within the Mexican-American adolescent

population. Put simply, more affluent Mexican-American teenagers are likely to only speak English with their friends. Many speak little or no Spanish at all. They will pronounce their Spanish surnames with an English accent and also use an English first name (e.g., Jimmy Reyes, with Reyes pronounced ray-us). For purposes of statistical analysis, this population was identified by having responded to the question, "What language or languages do you speak to your friends?"

English

Spanish

Spanish and English

by indicating "English," only. The second group of Mexican-American adolescents is comprised of persons who responded to the same question by indicating that they used only Spanish, or Spanish and English. English-speaking Mexican-Americans represent 63 percent of the Mexican-American students at Central High School and 43 percent at Sam Houston, but only 5 percent of Mexican-American students at Plainview and West Side High Schools. Of the entire Mexican-American population participating in the study, adolescents speaking only English comprise 25 percent of the total while those speaking Spanish, at least some of the time, constitute 75 percent.

There are three reasons why the responses to this question regarding language spoken to friends were chosen to differentiate the Mexican-American population. First, the two measures of SES used in this study--level of

parental education and father's occupation--do not refer directly to the adolescents themselves. The language spoken by the adolescent to his or her friends is a characteristic which the adolescents themselves recognize as a significant indicator of social differentiation. Second, language use is a part of a complex of characteristics comprising a stratification system meaningful to Corpus Christi adolescents. Schools where the students are primarily Spanish speaking (i.e., Plainview and West Side) are stereotyped by English speakers--and many Spanish speakers as well--as rough or "radical" schools. The word "radical" in Corpus Christi implies that there are lots of fights, drugs, and acts of delinquency.

When I had occasion to tell students and even some teachers at Central and Sam Houston High Schools that I had recently been at Plainview or West Side, they would often make half-serious comments such as, "Did you take a knife with you?" or "It must be quite a job working with those losers." Plainview and West Side, of course, did not deserve their reputation; but the prevalence of a culture that was not Anglo and not middle class seemed to be instrumental in maintaining the stereotype. Students at Sam Houston and Central who spoke Spanish or when speaking in English had a heavy accent were subjected to similar stereotypes. Conversely, some Spanish-speaking students consider some English-speaking Mexican-Americans who have conformed to the norms of the dominant segment of society

as "vendidos," or "sell-outs." The use of Spanish, then, is associated with the maintenance of an identity and way of life distinct from that of the Anglo and functions as a cultural boundary maintenance mechanism.

Third, this pattern of social differentiation on the basis of language use is related to the socioeconomic status of the student's family. As already stated, more affluent Mexican-Americans tend to speak only English. The vast majority of English-speaking students attended Central and Sam Houston High Schools. These are the schools with the lowest percentage of students eligible for the subsidized lunch program and are located in the higher income neighborhoods. In contrast, most students at Plainview and West Side are eligible for the lunch program and most students are from low-income families.

To further illustrate the relationship of SES with language use, only 35 percent of Mexican-American students who exclusively spoke English with their friends had a parent who had not graduated from high school. In contrast, 76 percent of students who use Spanish at least some of the time had parents who did not graduate from high school. Thirty-five percent of English-speaking Mexican-Americans had parents with a college degree or some post-high school education. This compares with only 13 percent for Spanish speakers. Thirty-six percent of English-speaking Mexican-Americans indicated that their fathers were employed either in professional or managerial

occupations. Only 10 percent of the fathers of Spanish speakers were so employed. Three percent of English speakers indicated that their fathers were unemployed, as compared to 8 percent for Spanish speakers. Thirty-six percent of the fathers of English speakers held blue collar jobs as compared to 55 percent of the Spanish speakers. When one examines the specific occupations that were listed as blue collar, the fathers of English speakers were much more likely to be employed in skilled positions or in relatively high-paying, unskilled occupations.

Black adolescents constitute the fourth category of teenagers in this study. Blacks constitute only 4 percent of the study population. Most of the Blacks in the study attended West Side High School. Because of the small number of Blacks participating in the study, data regarding this population will be examined in less detail than that of the other three categories of adolescents.

The relationship of one of the indicators of SES, level of parental education, to the four categories of adolescents is summarized in table 5 below. In terms of this indicator of socioeconomic status, the parents of Spanish-speaking Mexican-Americans are, by far, of the lowest SES while the parents of Anglo students are of the highest. English-speaking Mexican-Americans and Blacks occupy intermediate positions. The same tendency

is apparent when one examines the occupations of the parents of different categories of students, as shown in table 6.

TABLE 5
LEVEL OF PARENTAL EDUCATION WITHIN
ANALYTICAL CATEGORIES

	Spanish-speaking Mexican-Americans		English-Speaking Mexican-Americans		Blacks		Anglos	
	N	%	N	%	N	%	N	%
Less than high school	198	75.6	31	35.2	5	18.5	23	9.2
High school	29	11.1	26	29.5	11	40.7	62	24.9
Post-high school ed.	23	8.8	22	25.0	8	29.6	78	31.3
College degree	12	4.6	9	10.2	3	11.1	86	34.6
Total	262	100.1	88	99.9	27	99.9	249	100.0

TABLE 6
PARENTAL OCCUPATION WITHIN
ANALYTICAL CATEGORIES*

	Spanish-speaking Mexican-Americans		English-speaking Mexican-Americans		Anglos	
	N	%	N	%	N	%
Blue collar	149	55.2	34	36.2	85	36.5
White collar & managerial	28	10.3	34	36.2	124	53.2
Other or not specified	93	34.5	26	27.6	24	10.3
Total	270	100.0	94	100.0	233	100.0

*Information on this topic was not collected for an adequate number of Blacks.

Quantitative and Qualitative Data in Hypothesis Testing

It will be recalled that three general hypotheses will be tested in this study. It is hypothesized that: (1) the average blood pressures of Mexican-American and Black youths will be higher than the average blood pressure of Anglos; (2) problematic psychosocial adaptation will be more common among Mexican-Americans and Blacks than among Anglos; and (3) indicators of problematic psychosocial adaptation will be associated with high blood pressure. Standard statistical procedures such as chi square, Student's t, analysis of variance, bivariate correlations and multiple regression will be used in the testing of hypotheses. Interviews, participant observation, and archival data will provide information regarding the sociocultural context in which the quantitative data must be evaluated.

The investigation of possible relationships between blood pressure and one's position in the social order--as mediated by psychosocial adaptation--is the primary focus of this study. Nonetheless, if a holistic understanding of influences upon blood pressure is to be obtained, the impact of obesity, the heaviness of body build and other factors associated with the biological dimension of adaptation must also be considered. The influence of such factors on blood pressure will be examined statistically. Correspondingly, a secondary focus of the qualitative research is to provide information on

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dietary and other behavior not primarily related to psychosocial adaptation but which might otherwise exert an influence over blood pressure.

At this point it would be useful to describe in greater detail the methods by which data for this study were collected. First, the methods employed to measure blood pressure and other aspects of biological adaptation will be reviewed. Next, the manner in which the concept of psychosocial adaptation is defined and measured in this study is discussed. Finally, methods for gathering and utilizing information on the sociocultural dimension of adaptation will be reviewed.

Blood Pressure

Blood pressure, the primary focus of this study, is a measure of one aspect of the physiologic functioning of the organism. In the statistical analyses of this investigation it is the dependent variable. As discussed in the second chapter, blood pressure is expressed by using two numbers which represent the systolic and the diastolic pressures. Although both systolic and diastolic pressures were measured, systolic pressure alone will be examined in this study. This was also done in at least one other study--the epidemiologic survey by Kotchen et al. (1974). There are three reasons for limiting analysis to the systolic pressure only. First, systolic and diastolic pressures have been found to be very closely correlated (Kotchen et al. 1974; Miller and Shekelle 1976).

If the systolic pressure is high, the diastolic pressure is also likely to be high. Therefore, it is doubtful that additional information would be gotten from the separate analysis of both systolic and diastolic pressure. Secondly, it has been found in this and other studies (Voors et al. 1978; National Heart, Lung, and Blood Institute 1977; Langford et al. 1968) that the reliability of diastolic measurements is less than that of systolic measurements. Diastolic pressure is especially difficult to measure in children and adolescents. Finally, it is not at all clear that either systolic or diastolic pressure is the more potent predictor of morbidity or mortality (Kannel et al. 1961).

As was discussed in the second chapter, blood pressure is quite variable. It may change from moment to moment in response to any number of emotional and physical stimuli. For this reason, four pressure measurements were obtained from each student on two different days. The first two measurements were obtained in the context of training the students in the measurement of blood pressure. After the students had been instructed in the nature and significance of blood pressure, they would then spend at least two class sessions practicing how to measure blood pressure. In so doing, each student would find a partner. Each pair of students was given a stethoscope and an aneroid sphygmomanometer and was instructed in their use. The students were then told to practice taking their partner's blood pressure and that the accuracy of

their measurements would be assessed by the researcher and his assistants (nurses and physician's assistants at the Children's Heart Institute). At the end of the practice period, my assistants and I would measure each student's blood pressure twice with the sphygmomanometer that the student had been using. It is believed that this method minimized emotional arousal which so often interferes in the efforts of both researchers and clinicians to obtain basal measurements. The second pair of blood pressure measurements was done with a mercury manometer one or two days later. These measurements were taken in the context of constructing the student's own "cardiovascular risk factor scorecard." The cardiovascular risk factor scorecard is an instrument designed and used by the researcher for the purpose of helping students to estimate their own cardiovascular health status in terms of the known risk factors.

All measurements were taken with the student seated and arm resting comfortably on a desk or table. Eighteen aneroid sphygmomanometers were used in teaching the students and in taking the first set of blood pressure measurements. Each instrument's accuracy was checked daily while it was in use. The second set of measurements was made with a mercury manometer used daily in the clinical practice of the pediatric cardiologist. In order to minimize the effects of any momentary variations in blood pressure, the mean of the four systolic readings was used in all statistical analyses.

The Biological Dimension of Adaptation

As was previously stated, systolic blood pressure is the dependent variable in all statistical analyses to be presented in this study. Other factors associated with the organism itself, and the biological dimension of its adaptation to the environment perhaps constitute the most direct influences upon blood pressure. Although most of the hormonal, neurological, and hemodynamic changes hypothesized by the proponents of the defense-alarm response and Selye's general adaptation syndrome cannot be measured without expensive and invasive medical procedures, other less specific yet very important biological factors were measured in this study.

Pulse Rate

The rapidity of the heart beat, along with the amount of blood pumped with each beat are the two primary determinants of cardiac output. It will be recalled from the discussion of the Defense-Alarm Response in the last chapter that Brod and others believe that besides being part of the body's normal response to threat, increased cardiac output is a characteristic of the early labile stage of neurogenic hypertension. In this study, heart rate was measured by the palpitation of the radial pulse. The number of pulses was counted over a fifteen-second period and then multiplied by four to produce the pulse rate per minute. The pulse rate of each student, like blood pressure, was measured on two separate occasions in

order to minimize the effects of momentary fluctuations. The pulses were measured with each student seated comfortably. For the purposes of statistical analysis, each student's pulse rate was considered to be the mean of the two observations.

Body Size

Studies of adolescents have consistently found that measures of obesity, relative weight, or body mass are the most potent predictors of blood pressure (Loggie 1971; Bray 1976). It is not clear, however, whether obesity or general body size is the major factor influencing blood pressure. Body weight in relation to norms for one's sex, age, and height do not differentiate between musculature and fat. The same is true of ratios of height to weight, such as weight/height and weight/height². In this study, the influence on blood pressure of the Quetelet body mass index (weight/height²) and the triceps skinfold thickness were separately assessed.

The body mass index, or Quetelet Index, was chosen for this study as the primary measure of the heaviness of body build. Obviously, weight alone is largely determined by height. Therefore, in order to measure the influence on blood pressure of the heaviness of body build, weight should be examined independently of height. It has been argued that weight/height² is the measure of heaviness which best controls for the influence of height (James 1976). Also, the Quetelet Index has been used in

another major study of the blood pressure of adolescents (Miller and Shekelle 1976), and thus enhances the comparability of these data. The weight and height of each student were measured on a balance beam scale in street clothes, but without shoes. Height was measured with the student standing erect and looking straight ahead.

After the study was already begun, I obtained access to a Lange skinfold calliper. Measurements of triceps skinfold thickness were obtained on 540 of the 899 students participating in the study. While the Quetelet Index, other height/weight indices, and measures of weight relative to preestablished norms cannot differentiate fat from other components of the body mass, the measurement of skinfolds at appropriate body sites is considered an acceptable means of estimating the degree of fatness of the body (Malina 1971). The measurement of the skinfold over the triceps muscle at the midpoint of the upper arm (as determined by measuring the distance between the acromial process of the scapula and the olecranon, and then dividing by two) is one acceptable site that is commonly measured. It was the site chosen for this study. My research assistant and I were trained by Anthony Zavaleta, a physical anthropologist who specialized in the measurement of body composition in his training at the University of Texas. Each student was measured at least two times, or until a reproducible measurement was obtained. Skinfolds were measured to the nearest .5 mm.

Sex, Age, and Family History of Hypertension

Three other variables--sex, age, and family history of hypertension--will also be discussed in this section on biological influences upon blood pressure. While all of these could equally well be discussed as social variables, they will be discussed here for the sake of convenience. The variable, age, may be considered as an indirect measure of a composite of both social and biological characteristics that tend to develop or change as one grows older. One such characteristic is growth in the size of the body, for which separate measures have already been described. Also changing as one grows older are hormonal and phenotypic characteristics associated with sexual maturation. Sexual maturation elsewhere has been shown to affect blood pressure (Voors 1976). Physical growth was the only characteristic of the organism associated with aging which could be directly measured.

Epidemiologic studies have consistently shown that whether one is male or female influences one's blood pressure. During childhood females have higher blood pressures than males. During early adolescence, however, the blood pressures of males become higher than those of females and tend to remain higher through young adulthood and middle age. For reasons that are not entirely clear, one's sex has an effect upon blood pressure and must be taken into account in any study of the determinants of blood pressure.

Most researchers believe that heredity exerts a strong influence over blood pressure (Lee 1976; Swartz and Leitch 1975; McClain 1976). While the influence of heredity on blood pressure could not be directly measured in this study, students were asked whether none, one, or two or more persons in the immediate family (parents and siblings) had (1) high blood pressure or (2) had a heart attack or stroke. Questions regarding family history do not measure the influence of heredity alone. They do reveal, however, any combined effect on blood pressure of heredity and the way of living shared by family members.

Diet

There are two ways in which diet is thought to influence blood pressure. One is related to the intake of sodium and the other through the promotion of obesity. It is known that sodium causes the body to retain fluid, and that the avoidance of salt is an effective means of lowering blood pressure for some hypertensive persons. Furthermore, there is laboratory and epidemiologic evidence that the ingestion of differing levels of salt over a number of years by populations described as being otherwise similar can cause differences in the rates of hypertension and average blood pressure (Dahl et al. 1968; Shapiro et al. 1979). While no record of dietary salt intake was obtained in this study, it is known that the sodium content of the water consumed by persons who live in Corpus Christi, and most parts of South Texas, is likely to be higher than that

consumed by persons who live elsewhere (City of Corpus Christi 1978; Calabrese and Tuthill 1977). While the sodium in water is believed to constitute no more than 4 percent of the total amount of sodium consumed, it has been argued that the sodium content of water consumed over long periods of time may, in fact, have an effect upon blood pressure (Calabrese and Tuthill 1977). This issue will be examined in this study.

As was stated previously, being overweight consistently has been the most potent predictor of blood pressure values in studies of adolescents. In this study, each student was asked to submit a twenty-four-hour dietary history. These dietary histories, besides being used for the purpose of research, were also used to demonstrate the meaning of the concept of calorie in the cardiovascular health unit taught in conjunction with the research. The students were instructed in class as to the level of detail required in the dietary histories and were advised to write down what they ate and drank immediately after consuming it. Unfortunately, but not surprisingly, the level of thoroughness of the dietary histories varied greatly. While most dietary histories were not suitable for the purpose of rigorously examining the intake of calories or other nutrients, they were suitable to compare the types of food consumed by overweight persons and persons of average weight. It was for this purpose that the dietary histories were utilized. The dietary histories

of the fifty-seven heaviest students, whose body mass index (pounds/inches²) was at least .039, were compared to a random sample of fifty-seven other dietary histories.

Psychosocial Adaptation

The collection and interpretation of information regarding the impact of psychological and social factors on biological parameters of health is one of the most difficult problems facing researchers of health phenomena (Shapiro et al. 1979). As was discussed in Chapter II, studies which Stahl et al. have called "structural approaches" to this problem leave much to be desired. Supposed stress-producing social and psychological structures may or may not be experienced as problematic. A more productive approach to the study of social and psychological influences on health would be to focus on the perception and evaluation of one's relationship to one's surroundings.

In this study, three complementary methods were used to measure the perception and evaluation of social environments by Corpus Christi adolescents. First, quantitative measurements were obtained by the administration of the Psychosocial Adaptation Instrument. As will be discussed, this instrument was developed by the researcher but owes much to the Social Environment Rating Scales of Rudolf Moos. The second method used to gather information regarding the perception and evaluation of the environment was to conduct semistructured, open-ended interviews. The third method was to observe the behavior

of Corpus Christi adolescents in one social environment--the schools.

The Psychosocial Adaptation Instrument (PSAI)

The Psychosocial Adaptation Instrument is designed to measure adaptation to different psychosocial environments. As mentioned, the PSAI was influenced by Rudolf Moos' Social Environment Rating Scales (Moos 1974a). They are similar in the following ways: (1) both instruments utilize the concept "social environment"; (2) both instruments are used to determine whether a given social environment may exert an influence upon health; and (3) some of the items on the two instruments are similar.

Despite these similarities there are important differences between Moos' Social Environment Rating Scales and the Psychosocial Adaptation Instrument. One such difference is in the meaning of the term "social environment." Kirtz and Moos (1974:26) define a social (or psychosocial) environment as:

a system of interpersonal stimuli exerting influences on the individuals within the environment. These influences or presses can be categorized as relationship dimensions, personal development dimensions, and system maintenance dimensions. Although individuals are sufficiently similar, and environmental stimuli sufficiently potent that individuals within a given environment can make reliable or consistent judgments about the magnitude of a given dimension, the social stimuli do not act directly on the individual. Rather, it is his perception of the environment, as mediated by personality variables, role and status relationships, and his behavior within the environment which affects him directly, and in turn affects his personality and behavior.

Elsewhere, Moos (1976) describes environments as having their own "personalities." Although Moos recognizes that one's position in the social structure may somewhat alter one's perception of the environment, he appears to argue that the "basic personality of the environment" is largely independent of the perception of the observer. It is upon this point that Moos' definition of the social environment differs from that used in this study.

In this study "social environment" is a totally subjective concept having no meaning apart from the unique perception of the observer. Unlike Moos, it is not assumed that a social environment will have its own personality perceived more or less similarly by all observers. On the contrary, it is postulated that both idiosyncratic perceptual differences and, more importantly, one's position in the social structure will greatly influence how one perceives and experiences a given social setting. To blur the distinction between the perception of social phenomena and the functioning of the social system does nothing to enhance the understanding of the influence of social phenomena upon stress-related illness (Mechanic 1974). Social structure and the subjective perception of the social environment should be separately assessed.

Moos uses his Social Environment Rating Scales for the purpose of measuring the impact of the environment upon individuals. The respondent describes environments in terms of relationship, personal development, and system

maintenance dimensions. These are considered to be universal dimensions by which all social environments can be described. Moos' intent is to measure how environments differ in terms of these universal dimensions, and the impact of such differences upon the health of individuals. Like many other scholars, Moos predicts that environments which are nonsupportive, overly unpredictable, or too demanding will have a negative impact on health. He also predicts adverse health consequences when the "personality of the environment" is incompatible with that of the individual. For example, a person who values spontaneity and dislikes schedules would suffer in a very controlling, ordered environment.

In contrast, it is not assumed in the PSAI that social environments have three dimensional "personalities" nor that such "personalities" would influence health. Instead of postulating that the social environment, itself, is a determinant of health status, the PSAI is designed to help determine (1) whether patterns of psychosocial adaptation to various social environments differ according to the statuses one holds in the social system and (2) whether any such patterns of adaptation may have an influence upon systolic blood pressure.

Design and Administration of the Psychosocial Adaptation Instrument

The PSAI was administered to all adolescents participating in the study with the exception of those who

were absent on the days during which it was administered. Each of the items on the PSAI was read once to all participating students and then repeated. Each respondent had a copy of the PSAI which included all items that were being read aloud as well as a line with five equidistant points on which to respond to each item. Each item was in the form of a statement. Each statement was worded in such a way as to describe one aspect of psychosocial adaptation in either a positive or negative way. The student responded to each item by placing an "X" over one of the five points on the line. The placement of an "X" over one end of the scale would represent a very negative response. The placement of an "X" over the point at the opposite end of the scale would represent a very positive response.

For example, students were read the following statement:

I _____ understand what to do and how to act in order to do well in school.

<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>
Always	Usually	Sometimes	Rarely	Never
(5)	(4)	(3)	(2)	(1)

They were then asked to place an "X" over the word which best completed the statement. While some of the statements required the respondent to pick the word which most accurately completed a statement about his or her adaptation, other items were of a different format, such as:

There are few, if any, people who I can really consider to be my friends. This statement describes my feelings:

<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>
Very well	Fairly well	Don't know	Not very well	Not at all
(1)	(2)	(3)	(4)	(5)

Whichever format was used, each item was considered for the purposes of statistical analysis to be an interval level measurement. In scoring each item, five points were given for the most positive answer, one point for the most negative answer, three points for a neutral answer, and two and four points, respectively, for moderately negative and moderately positive statements.

There are two categories of items on the PSAI: Those that measure psychosocial adaptation to specific environments and those that measure different aspects of psychosocial adaptation in general. Most of the items on the PSAI belong to the first category.

Forty-five items are designed to measure five dimensions of psychosocial adaptation to five separate environments. An additional forty-sixth item is a statement requiring a yes/no response to the question of participation in extracurricular activities.

<u>Dimensions</u>	<u>Environments</u>
1. Sense of Adequacy	1. Peer
2. Degree of Relatedness to Others	2. School

<u>Dimensions</u>	<u>Environments</u>
3. Identification with Behavioral Expectations	3. Family
4. Clarity of Norms	4. Boy-Girl
5. Subjective Importance of Environment to Self	5. Extracurricular*

The five dimensions of adaptation represent major psychosocial characteristics that have been associated in the literature with ill health and which were reviewed in chapters 1 and 2. One item is used to measure the subjective importance of each social environment. Two items are used to measure each of the other four dimensions of psychosocial adaptation within each social environment.

The second category of items on the PSAI are those measuring the following dimensions of adaptation:

- General Sense of Adequacy
- General Degree of Relatedness to Others
- General Identification with Behavioral Expectations
- General Clarity of Norms
- General Importance of the Social Environment to Self
- Role Conflict
- Sense of Efficacy
- Time Pressed Striving
- Inward Directed Anger
- Coping with Problems by:
 - Denial
 - Projection of hostility
 - Frustration
 - Acting to resolve the problem

All items on the PSAI were pretested by asking adolescents of differing ethnic and social class backgrounds

*Students responded to statements regarding their participation in the organized social activity (other than academics) which took the greatest amount of their time. Examples include: job, athletics, school clubs, musical groups, church activities. If a student did not participate in any extracurricular activity, these items were left blank.

what they understood each item to mean. A number of modifications were made to the original drafts of the PSAI items as a result of the pretest. The researcher is satisfied that the pretest established the face validity of the items. Also, during the administration of the PSAI, the students were encouraged to inform the researcher if they were not certain about the meaning of any item. Few questions were asked. When questions were asked, it is the impression of the researcher that he was able to sufficiently clarify the meaning of all items in question. Furthermore, the students were encouraged to make written comments regarding any item that they wished. The great majority of written comments were elaborations of the standardized response and indicated that the items were correctly understood.

Personal Interviews

The second method of gathering information regarding the psychosocial adaptation of Corpus Christi adolescents was through personal interviews. One hundred and forty-one students were formally interviewed during the course of the study. Persons from all social backgrounds were included. The objectives of the interviews were similar to those of the Psychosocial Adaptation Instrument except that instead of soliciting numeric responses to preconceived questions, the interviews elicited valuable insights into the ways that different students perceived themselves in different social settings. The objectives

were: (1) to determine whether patterns could be perceived in the interviews that would differentiate persons with high blood pressure from others, and (2) determine whether the lives of Mexican-Americans and Blacks are more likely than others to be characterized by patterns of social adaptation that have been linked in the literature to hypertension.

Each interview lasted approximately one hour, and followed a semistructured format. The students were asked to describe what they did in each of the five social environments listed on the PSAI, their likes and dislikes, their hopes and expectations for the future, as well as their memories about the past. Students were asked to discuss their families, their daily routines, as well as high points and low points during different periods of their lives and in different facets of their lives. The interviews were conducted in private, although occasionally one or two friends would also sit in. The presence of friends usually enhanced the detail of information during the interviews, as the comments of friends would often stimulate further comments from the person being interviewed.

The interviews were conducted after the researcher had completed teaching the two-week unit on cardiovascular health and had also finished collecting all quantitative data. After two weeks of contact with the students in class, the adolescents generally had come to know and

trust the researcher. On the basis of formal evaluations by the students of my two weeks of teaching, as well as from informal conversations, it was clear that I was able to establish a considerable amount of rapport. This rapport enabled many of the students to be quite frank and candid with me during the interviews. It was made clear to the students before each interview that what they said would be considered confidential. Earlier, in the statement of informed consent signed by the students and their parents, it was made known that the identities of all persons providing information would be protected.

Ethnographic Observation

The third method of obtaining information on the psychosocial adaptation of Corpus Christi adolescents was ethnographic observation in the schools. The behavior of students in class, in the halls and cafeterias, and in the school yards was observed. Together, the personal interviews and the ethnographic observation provided considerable insight into the reality of being a teenager in Corpus Christi. When analyzed in conjunction with the quantitative data from the Psychosocial Adaptation Instrument, these research methods revealed a more complete picture of psychosocial adaptation than either quantitative or qualitative data alone could produce.

The Gathering of Information on the Influence
of Social Structure on Blood Pressure

In the present model of research, it is postulated that the biological and psychosocial adaptation of individuals may be understood as constituting the most direct influences on parameters of health such as blood pressure. Nonetheless, the social structure--and one's position in it--are no less important determinants of health. In that Homo sapiens is a social animal which utilizes culture as its primary means of adaptation, to ignore the workings of society and culture would be to ignore some of the most fundamental determinants of health. Society and culture determine the types of general challenges which we face in living as well as more specific challenges to health associated with specific statuses and roles. Members of society are provided with a greater or lesser endowment of resources to meet these challenges, depending upon one's position in the social order. The primary objective of gathering information on the social structure of Corpus Christi was to determine how it influences patterns of biological and psychosocial adaptation.

Although information was collected on the social structure of the city in general, particular attention was paid to patterns of social relations of teenagers from different segments of the community. Interviews with students and teachers and observations of social interaction in the school setting were the primary sources

of information. Additional information on the social structure of Corpus Christi was derived from the day-to-day observations which I made as a resident of the city for three years. I was a member of Corpus Christi's Council #1 of The League of United Latin American Citizens (LULAC). I was also on the board of directors of Big Brothers-Big Sisters of Nueces County and served on the planning board of the Corpus Christi Hypertension Screening Program. My participation in these organizations, plus my work at The Children's Heart Institute of South Texas and in the schools introduced me to a broad spectrum of the people of Corpus Christi, including some of its most influential leaders. Documentary sources of information were also used in gathering data on the social structure of the city. These include: the 1970 Census; information from the Nueces County and Texas State Health Departments; materials from the Corpus Christi Departments of City Planning and Water; The Corpus Christi Caller-Times (newspaper); historical documents; publications from the Coastal Bend Council of Governments; and school yearbooks and newspapers.

CHAPTER IV

ETHNICITY, BLOOD PRESSURE AND PSYCHOSOCIAL
ADAPTATION

Ethnicity and Blood Pressure

Consistent with the first hypothesis of this study, significant differences were found to exist in the mean systolic blood pressures of youths from different segments of the community.

TABLE 7
DISTRIBUTION OF SYSTOLIC BLOOD PRESSURES
BY ETHNIC GROUP

	Mean	S.D.	N.
Mexican-Americans	111.50	11.68	460
Anglos	107.19	10.47	254
Blacks	113.40	11.85	30
Total	110.10	11.27	744

(Eta² = .037 F = 9.72 p<.01)

According to the analysis of variance, the differences among these three segments of the community are significant. There is less than one chance in 100 that the differences

in mean systolic pressure among these three groups are due to chance. The statistic, Eta^2 indicates that 3.7 percent of the variation in blood pressure may be statistically accounted for by the variable, ethnicity. The distribution of blood pressure by ethnic group is depicted in figure 1.

As was indicated in chapter 2, it is known that from adolescence through middle age, males tend to have higher blood pressures than females. Further, it is known that during childhood and adolescence, blood pressure rises with age in virtually all populations. The influence of age and sex on blood pressure was examined in order to determine whether these differences among ethnic groups in mean systolic blood pressure might be due to either of these two extraneous factors.

Age

The mean age of the study population is 15.38 years. The mean age of Anglos is 15.42 years. Age does not exert a statistically significant influence over blood pressure for the total population, or for Mexican-Americans or Anglos when viewed separately. The variable age may be considered a composite measurement of social as well as biological characteristics that change over time. One important biological characteristic that changes over time during youth is the size of the body. Also occurring during adolescence are various hormonal and phenotypic changes associated with sexual maturation. Any change in systolic blood pressure caused by variation in these characteristics

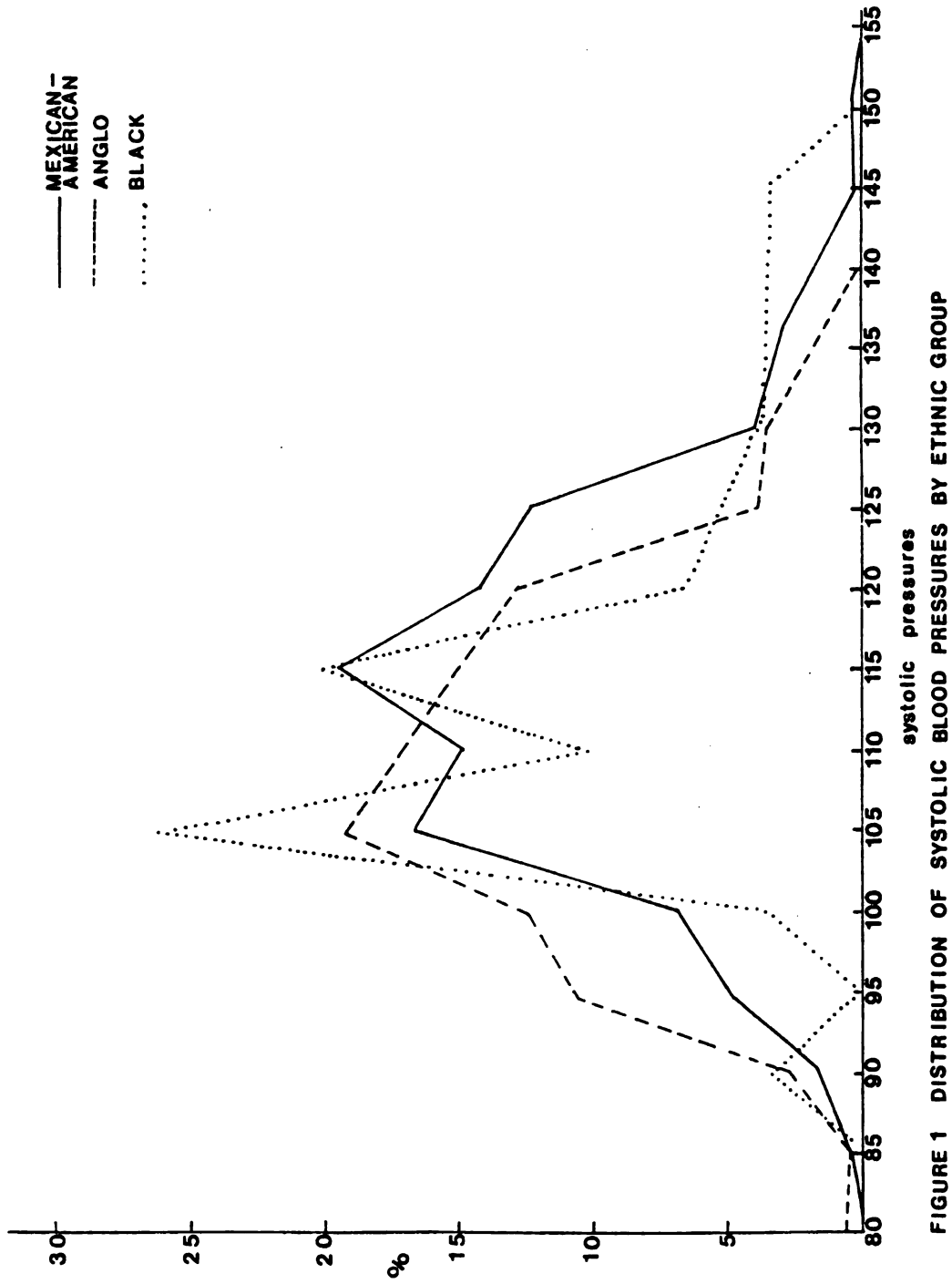


FIGURE 1 DISTRIBUTION OF SYSTOLIC BLOOD PRESSURES BY ETHNIC GROUP

was not significantly related to change in the variable, age. Eighty-seven percent of the youths participating in this study were between the ages of fourteen and sixteen.

Sex

Consistent with other studies, the mean systolic blood pressure of male adolescents in Corpus Christi was found to be significantly higher than that of females.

TABLE 8
MEAN SYSTOLIC PRESSURE BY SEX

	Mean	S.D.	N.
Males	111.73	11.06	380
Females	108.52	11.66	373
Total	110.14	11.47	753
(Eta ² =.020 F=14.95 p<.01)			

Differences in the mean blood pressures of males and females were also found when each of the three ethnic groups was examined separately.

TABLE 9
MEAN SYSTOLIC PRESSURE BY SEX
WITHIN ETHNIC GROUPS

	Mexican- Americans	Anglos	Blacks
Males	112.57	109.50	113.14
Females	110.37	105.05	110.36
	(Eta ² =.009; F=4.07; p<.05)	(Eta ² =.045; F=11.92; p<.01)	(Test for statis- tical significance not conducted for Blacks)

It is interesting to note that the magnitude of difference in the mean blood pressures of male and female Mexican-Americans is relatively small, especially in comparison to the Anglo population. Possible explanations for this will be discussed later in the study.

One possible way in which sex could explain the previously described differences in mean blood pressure among ethnic groups is if the ratio of males to females varies from ethnic group to ethnic group. As can be seen in table 10, the ratio of males to females does vary somewhat.

TABLE 10
DISTRIBUTION OF MALES AND FEMALES
WITHIN ETHNIC GROUPS

	Mexican-Americans		Anglos		Blacks	
Males	231	(50.4%)	122	(48.0%)	16	(64.0%)
Females	227	(49.6%)	132	(52.0%)	9	(36.0%)

Among Blacks, the ratio of males to females is much higher than among Anglos and Mexican-Americans. An examination of table 9 shows that the mean systolic blood pressure of Black females is no higher than that of Mexican-American females. The mean blood pressure of Black males is only slightly higher than that of Mexican-American males. Thus, the over-representation of males among Blacks in this study explains why they appear to have significantly higher blood pressures than Mexican-Americans. Thus, the sex specific

comparisons indicate that the mean blood pressure of Blacks is almost identical to that of Mexican-Americans but is still higher than that of Anglos.

The ratio of males to females among Mexican-Americans is also slightly higher than it is among Anglos. Nonetheless, table 9 and figures 2 and 3 indicate that even after taking this discrepancy into account, Mexican-Americans still have higher blood pressures than Anglos. Statistical analyses to be presented later in this study will demonstrate that after controlling the influence of sex, differences in the mean systolic blood pressures of Mexican-Americans and Anglos remain statistically significant.

Language Use and the Question of Socioeconomic Status

In addition to the hypothesis that Mexican-Americans and Blacks would have higher blood pressures than Anglos, it was also expected that there would be differences in mean systolic blood pressure between Spanish-speaking and English-speaking Mexican-Americans. It was anticipated that Spanish speakers would tend to have higher blood pressures than English-speaking Mexican-Americans. Contrary to expectations, a t-test could identify no significant difference in mean systolic pressure between these two groups.

As discussed in chapter 3, responses to a survey question regarding the language used when communicating with friends was chosen as the variable by which to

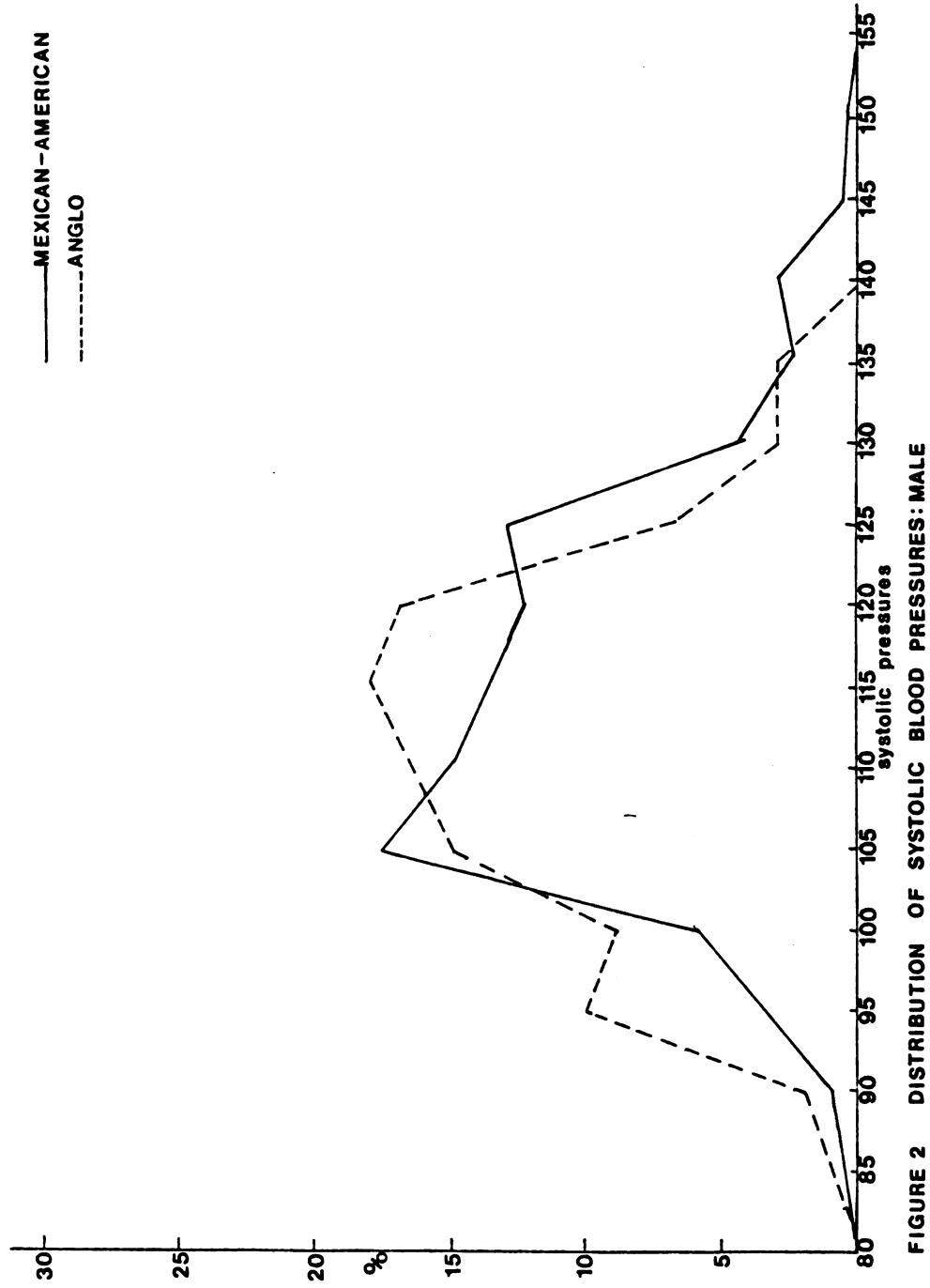


FIGURE 2 DISTRIBUTION OF SYSTOLIC BLOOD PRESSURES: MALE

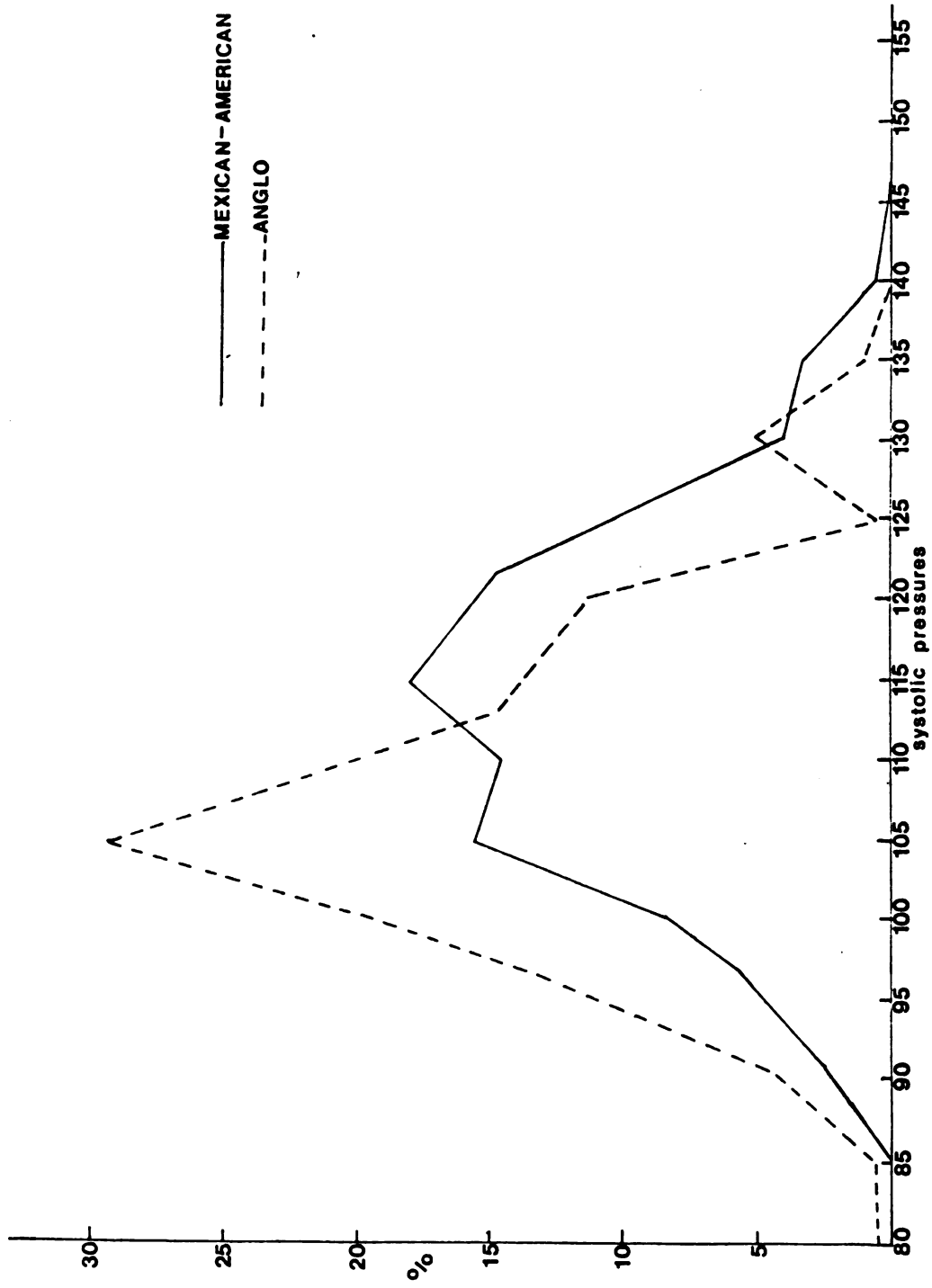


FIGURE 3 DISTRIBUTION OF SYSTOLIC BLOOD PRESSURES:FEMALE

TABLE 11
BLOOD PRESSURE AND LANGUAGE USED BY
MEXICAN-AMERICANS

	Mean	S.D.	N.
Spanish-Speaking Mexican-Americans	111.73	12.03	252
English-Speaking Mexican-Americans	113.03	10.55	84

(t = -0.90 p = n.s.)

differentiate the Mexican-American population into more homogenous groups in terms of cultural and socioeconomic characteristics. One might question whether differences in blood pressure might be more readily discovered by directly examining the relationship of blood pressure to indicators of socioeconomic status. The possible relationship between one such indicator of socioeconomic status, level of parental education, and blood pressure was in fact examined. It will be recalled that the parents of Mexican-American students (especially Spanish speakers) received somewhat less education than the parents of Black students, and much less education than the parents of Anglo students. Now that the relationship between blood pressure and ethnicity has been established, it should not be surprising that when the entire study population was examined, an inverse relationship was discovered between parental education and blood pressure. The fewer the years of schooling for one's parents, the higher one's blood pressure was likely to be. When Mexican-

American and Anglo students were examined separately, however, the statistical relationship between blood pressure and level of parental education totally disappeared.

Ethnicity and the Risk of Hypertension

As is apparent from an examination of figures 1, 2 and 3, not only is the mean systolic blood pressure of Mexican-Americans higher than that of Anglos, but a greater proportion of Mexican-Americans have systolic pressures in the upper range of the distribution. As noted in chapter 2, persons with relatively high blood pressure for their age during youth are at greater risk than others of becoming hypertensive later in life. The following joint frequency distribution and chi-square test indicate that Mexican-American youths in Corpus Christi are significantly more likely than Anglos to have blood pressures in the upper percentiles. The proportion of Mexican-Americans and Anglos whose blood pressures are in the highest fifteen percentiles is compared to the proportion in a comparably sized control group with relatively low blood pressure. Persons whose blood pressures fell between the fifteenth and twenty-ninth percentiles were arbitrarily chosen as the control group with relatively low blood pressures. On the basis of this joint frequency distribution, it can be predicted that a greater proportion of Mexican-American youths will eventually become hypertensive than Anglos.

TABLE 12
ETHNIC REPRESENTATION IN HIGH BLOOD PRESSURE
AND CONTROL GROUPS

	Mexican- Americans	Anglos	Total
Control Group	56 41.5%	45 68.2%	101 50.2%
>85th Percentile	79 58.5%	21 31.8%	100 49.8%
Total	135 67.2%	66 32.8%	201 100%

($\chi^2 = 11.60$, $p < .01$)

Ethnicity and Problematic Psychosocial

Adaptation

In themselves, these differences in blood pressure among ethnic groups explain little. As has been discussed above, there are many possible explanations for differences in the blood pressures of groups or populations--differences relating to the biological, psychosocial, and sociocultural dimensions of human adaptation. Of particular interest here, however, is the possible influence of problematic psychosocial adaptation associated with ethnic status or other characteristics indicative of one's position in the social order. If problematic psychosocial adaptation is responsible for the differences in blood pressure among ethnic groups, then one would expect Mexican-American and Black youths to have relatively more problematic psychosocial adaptation than Anglo teenagers, as measured by the

Psychosocial Adaptation Instrument. It is the second hypothesis of this study that such will be the case. Further, it is expected that Spanish-speaking Mexican-Americans will have relatively more problematic psychosocial adaptation than English-speaking Mexican-Americans. In order to test this second hypothesis, the responses to each of the sixty-four Psychosocial Adaptation Instrument items of Anglo, Black and Mexican-American (English-speaking and Spanish-speaking) youths were examined. T-tests of the mean responses to each of the PSAI items were conducted comparing: (1) Anglos with Mexican-Americans; (2) Anglos with Blacks; and (3) Spanish-speaking Mexican-Americans with English-speaking Mexican-Americans.

Significant differences were found to exist in the responses of these groups to the PSAI items.* The differences in the responses of Anglos and Mexican-Americans generally are consistent with what is predicted by Hypothesis Two. Of the sixty-four PSAI items, Mexican-American and Anglo youths significantly differed ($p < .05$) in their responses to thirty-eight of these items. Of these thirty-eight items, the responses of Mexican-Americans were indicative of relatively more problematic psychosocial adaptation on thirty-four. Spanish-speaking and English-speaking Mexican-Americans significantly differed in their responses to twelve of the sixty-four items. Consistent with expectations, the responses of Spanish speakers were indicative of

*The results of these t-tests are reported in appendix 4.

relatively more problematic psychosocial adaptation for all twelve of these items. In the comparison of Blacks with Anglos, however, the expected pattern of differences in psychosocial adaptation could not be identified. Blacks and Anglos significantly differed in their responses to twenty-two items. On only ten of these items were the responses of Blacks indicative of more problematic psychosocial adaptation. However, due to the small number of Black teenagers for whom there is data regarding psychosocial adaptation (twenty-eight) and the relatively greater variability (i.e., large standard deviation) within the Black population regarding their responses to many of the PSAI items, the validity of data on their psychosocial adaptation is questionable. Because of the small number of Blacks, both in the population of Corpus Christi and in the study population, the main focus of this study is upon the Mexican-American and Anglo populations.

Psychosocial Factors

In order to clarify the significance of these differences in the responses of Mexican-Americans and Anglos to PSAI items, a factor analysis was conducted on responses to fifty-three of the sixty-four items.* Factor analysis functions to reduce the complexity of the data by identifying underlying similarities in patterns of responses. This analysis produced a total of ten factors, composed of

*Eleven items related to extracurricular activities were excluded because many of the participants in the study did not participate in any such activity, and therefore did not respond to these items.

a total of thirty-eight PSAI items. Some of these factors identify the same underlying dimensions that were discussed in chapter 3. The grouping of items into other factors, however, identified certain distinctions that were not foreseen. The ten factors, and the items that comprise them are as follows:

- Factor 1 Efficacious Integration of Self into Surroundings
(Items 2, 7, 11, 15, 22, 45, 53, 57, 58)
- Factor 2 Adaptation in the Family Environment (Items 21,
23, 24, 25, 57, 58)
- Factor 3 Identification with General Behavioral Norms
(Items 37, 39)
- Factor 4 Emotional Coping Style (Items 3, 61C, 61D)
- Factor 5 Adaptation in Boy-Girl Relationships (Items 16,
17, 50, 51)
- Factor 6 Adaptation in Peer Environment (Items 12, 19, 20,
46, 47, 48)
- Factor 7 Identification with Official School Norms
(Items 6, 8, 41)
- Factor 8 Subjective Sense of Adequacy at School (Item 42)
- Factor 9 General Degree of Social Involvement (Items 1,
5, 59)
- Factor 10 Nonemotional Coping Style (Items 61A, 61B)

PSAI items were assigned to one of the ten factors if there was a correlation of at least .45 between the individual PSAI item and that factor. The factor matrix presented in table 13 shows the correlation of individual

TABLE 13
CORRELATION MATRIX OF PSYCHOSOCIAL FACTORS

Factor	1	2	3	4	5	6	7	8	9	10
PSAI Item										
1	0.139	-0.084	-0.125	0.127	-0.027	0.112	-0.258	-0.086	-0.492	-0.064
2	0.607	0.046	0.090	0.092	0.174	0.070	-0.042	0.135	0.028	0.144
3	0.243	-0.005	0.010	0.524	0.103	-0.077	0.084	-0.065	-0.001	-0.094
5	0.125	0.211	-0.118	0.106	0.151	0.158	-0.007	0.202	-0.487	0.147
6	0.069	0.179	0.041	-0.014	0.034	0.184	-0.615	-0.057	0.049	0.066
7	0.503	-0.028	0.216	0.113	0.061	0.037	-0.353	0.172	-0.147	0.020
8	-0.009	0.184	-0.177	-0.014	-0.013	-0.032	-0.687	0.104	-0.089	-0.037
11	0.555	0.000	-0.055	-0.041	0.106	0.335	0.056	0.001	-0.155	0.035
12	0.173	0.108	0.196	0.129	0.085	0.471	0.008	0.010	-0.119	0.105
15	0.587	-0.052	-0.013	0.014	-0.019	0.121	0.017	-0.094	-0.237	0.052
16	0.048	0.080	-0.090	0.026	0.718	0.133	-0.081	-0.034	0.126	-0.050
17	-0.044	0.097	-0.130	0.072	0.733	0.148	-0.067	0.011	0.079	0.036
19	0.146	0.049	0.256	0.069	0.120	0.470	-0.254	-0.132	-0.216	0.066
20	0.072	0.058	0.096	0.049	0.263	0.571	0.004	-0.089	-0.214	0.111
21	-0.033	0.689	-0.093	-0.012	0.073	-0.158	-0.229	0.007	0.104	0.026
22	0.460	-0.047	0.057	0.301	0.099	0.062	0.039	0.160	0.014	0.032
23	0.050	0.511	-0.267	-0.244	0.084	-0.001	-0.309	0.046	0.051	-0.026
24	-0.103	0.574	-0.028	0.210	-0.010	0.158	-0.104	0.091	-0.047	0.066
25	0.056	0.674	-0.080	0.056	0.040	0.104	-0.092	0.065	-0.052	-0.067
37	-0.050	0.097	-0.522	0.133	0.130	0.092	-0.089	0.047	-0.065	0.026
39	0.012	0.072	-0.518	0.150	0.098	0.043	-0.048	-0.001	-0.054	-0.017
41	-0.134	0.324	0.033	0.113	0.031	0.021	-0.524	0.136	-0.023	0.157
42	0.024	0.099	-0.015	-0.021	0.031	-0.048	-0.080	0.725	0.067	0.003
45	0.483	-0.057	-0.102	-0.114	-0.042	0.390	-0.050	-0.022	-0.080	-0.059
46	0.127	-0.055	0.203	0.084	0.116	0.625	-0.069	0.149	0.101	0.012
47	0.211	0.015	-0.187	-0.029	0.123	0.622	-0.082	0.013	0.023	0.084
48	0.157	0.079	-0.130	0.113	0.115	0.644	-0.027	0.033	-0.053	-0.036

TABLE 13--Continued

Factor	1	2	3	4	5	6	7	8	9	10
PSAI Item										
50	0.111	0.016	-0.068	0.047	0.648	0.148	0.028	0.128	-0.141	-0.097
51	0.125	0.043	0.008	0.110	0.697	0.163	0.026	-0.020	-0.089	0.046
53	0.524	0.305	-0.172	0.062	0.000	0.115	-0.107	-0.260	0.213	0.002
56	0.130	0.714	0.010	-0.022	0.147	-0.018	-0.093	0.057	-0.094	-0.049
57	0.470	0.289	-0.076	0.059	0.029	0.269	-0.080	-0.214	-0.042	-0.033
58	0.491	0.238	-0.001	0.327	0.005	0.167	0.026	0.061	-0.002	0.039
59	0.041	0.098	-0.040	0.201	0.070	0.034	-0.044	0.101	0.476	0.032
61A	-0.127	0.046	0.024	-0.131	-0.017	-0.141	0.228	0.057	0.056	-0.693
61B	-0.117	0.107	-0.033	0.270	0.191	-0.032	-0.158	-0.088	-0.239	-0.453
61C	-0.195	-0.048	0.045	-0.568	-0.076	-0.139	0.108	0.044	-0.094	0.017
61D	0.083	-0.076	0.137	-0.587	0.027	-0.173	0.070	-0.023	0.009	-0.170

PSAI items with each of the ten factors. Only the thirty-eight PSAI items with at least a .45 correlation with any one of the factors are included in the matrix.

As was done with the individual PSAI items, t-tests were conducted in order to measure the differences between ethnic and language groups in scores for each of the ten factors. The scores of Mexican-Americans were compared to those of Anglos, and the scores of Spanish-speaking Mexican-Americans were compared to those of English-speaking Mexican-Americans. The scores of Blacks and Anglos were not compared due to questions of validity related to the small number of Blacks. The conceptual basis for each of the factors, along with the t-tests are presented below.

Factor 1 Efficacious Integration of Self into Surroundings

Factor 1 is the most heterogenous of the ten factors. It groups items from diverse social environments, and relates to different dimensions of adaptation. The key to understanding the underlying concept, however, seems to be item 2, the item that is most strongly correlated with this factor: "In general, I feel that I just don't have it together." Mexican-Americans and Anglos differed more in their scores to this factor than for any other. Mexican-American youths clearly felt less "together."

In addition to these ethnic differences, Spanish-speaking Mexican-Americans scored lower than English-speaking Mexican-Americans.

TABLE 14
ETHNIC DIFFERENCE IN SCORES
FOR FACTOR 1

	Mean	S.D.	N.
Mexican-Americans	28.52	6.23	402
Anglos	32.10	6.51	249
(t = -7.00 p<.01)			

TABLE 15
LANGUAGE DIFFERENCE IN SCORES
FOR FACTOR 1

	Mean	S.D.	N.
Spanish Speakers	28.14	5.91	202
English Speakers	31.52	6.68	61
(t = -3.38 p<.01)			

Factor 2 Adaptation to the Family Environment

All of the items comprising this factor relate to adaptation in the family environment. Every dimension of adaptation except one is included. There are items regarding clarity, importance, identification with norms and relatedness, but no item regarding adequacy in the family environment. It is interesting to note, however, that an item regarding adequacy in the home environment was included in factor 1. Mexican-Americans scored higher on factor 2 than did Anglos, indicating less problematic

psychosocial adaptation in this environment. This is shown in table 16.

TABLE 16
ETHNIC DIFFERENCE IN SCORES
FOR FACTOR 2

	Mean	S.D.	N.
Mexican-Americans	20.71	2.99	411
Anglos	19.73	3.53	250

($t = 3.79$ $p < .01$)

Three of the four PSAI items in which the response Mexican-Americans clearly indicated less problematic psychosocial adaptation were in reference to the family environment. They are included in this factor. There were no significant differences in the responses of Spanish-speaking and English-speaking Mexican-Americans.

Factor 3 Identification with General Behavioral Norms

The two items that make up this factor have to do with a general understanding of "why people act the way they do," and one's inclination to "act the way that others expect me to act." There were no significant differences between ethnic or language groups in their scores on this factor.

Factor 4 Emotional Coping Style

This factor is composed of three PSAI items measuring the likelihood of reacting to problems with frustration,

inner-directed anger, and outward-directed anger. There were no significant differences between groups in their scores for this factor.

Factor 5 Adaptation in the Boy-Girl Environment

The four items comprising this factor relate to identification with behavioral norms, clarity and adequacy in this social environment. There were no significant differences between groups in their scores for this factor.

Factor 6 Adaptation to the Peer Environment

Four of the six items making up this factor refer to the peer environment as I had originally defined it. The final two relate to the boy-girl environment, which of course might also be thought of as part of the peer environment. Two items refer to one's sense of adequacy, two to clarity of norms, and two to one's sense of social relatedness. As shown in table 17, the scores of Mexican-Americans and Anglos significantly differed for this factor.

TABLE 17
ETHNIC DIFFERENCE IN SCORES
FOR FACTOR 6

	Mean	S.D.	N.
Mexican-Americans	20.66	4.13	409
Anglos	21.76	3.30	247
(t = -3.36 p<.01)			

On the basis of scores for this factor, Mexican-American youths have greater difficulties in their adaptations to the peer environment. There were no significant differences between language groups.

Factor 7 Identification with Official School Norms

This factor is composed of three items: two regarding identification with school norms per se, and one regarding the importance of doing well in school. On two of these items, the responses of Mexican-Americans and Anglos did not significantly differ. Mexican-Americans, however, were more likely to agree with the statement that trying to learn what the teachers present in class is worthwhile. All in all, the scores of Mexican-Americans were significantly higher than those of Anglos, suggesting that Mexican-Americans identify somewhat more with official school norms than do Anglos. This is shown in table 18.

TABLE 18
ETHNIC DIFFERENCE IN SCORES
FOR FACTOR 7

	Mean	S.D.	N.
Mexican-Americans	12.33	2.02	410
Anglos	12.01	1.82	250

(t = 2.02 p<.05)

There were no significant differences between language groups.

Factor 8 Subjective Sense of Adequacy at School

This factor is composed of only one item, item 42. Although it is unusual to have a factor made up of only one item, this factor was included because it helps to make an important distinction. Many of the items which comprise factor 1, Efficacious Integration of Self into Surroundings, address the question of the adequacy of one's performance of social roles in various environments, including the school. In contrast to these items for which the responses of Mexican-Americans were indicative of more problematic psychosocial adaptation, factor 8 explicitly addresses the subjective aspect of role performance in school: "From my point of view, I am doing as well in my school work as I need to do." When the question of adequacy of role performance is addressed from an explicitly subjective point of view, the responses of Mexican-Americans and Anglos did not significantly differ.

Factor 9 General Degree of Social Involvement

The three items making up this factor address the question of the degree of involvement and relatedness to one's social environment. Table 19 shows that Mexican-Americans tended to be less engrossed in and more alienated from their social environments than were Anglo youths. In addition, Spanish-speaking Mexican-Americans indicated that they were less deeply involved in their social environments than English-speaking Mexican-Americans. This is shown in table 20.

TABLE 19

ETHNIC DIFFERENCE IN SCORES
FOR FACTOR 9

	Mean	S.D.	N.
Mexican-Americans	-4.17	1.93	410
Anglos	-5.09	1.64	250

(t = 6.27 p<.01)

TABLE 20

LANGUAGE DIFFERENCE IN SCORES
FOR FACTOR 9

	Mean	S.D.	N.
Spanish Speakers	-4.02	1.92	202
English Speakers	-4.62	1.78	61

(t = 2.23 p<.05)

Factor 10 Nonemotional Coping Style

Just as factor 4 identified a tendency for youths to respond in similar ways to items regarding the likelihood of coping with problems in an emotional way (i.e., through frustration and aggression), factor 10 identifies a tendency among some youths to employ two different non-emotional coping styles: denial and problem solving. Mexican-American youths were more likely to indicate that they use denial as a means of coping than were Anglo youths. They were no more likely than Anglo youths to indicate that they cope with problems by acting to rectify the

situation, however. When combining these two items into factor 10, Mexican-Americans were more likely to use a non-emotional coping style than were Anglos. This is apparent in table 21.

TABLE 21
ETHNIC DIFFERENCE IN SCORES
FOR FACTOR 10

	Mean	S.D.	N.
Mexican-Americans	6.32	1.46	409
Anglos	5.88	1.29	251

(t = 3.94 p<.01)

There was no difference in the scores of Spanish-speaking and English-speaking Mexican-Americans.

The psychosocial adaptation of youths participating in this study and the sociocultural context in which it occurs will be examined in detail in the next two chapters. The large number of PSAI items for which the mean responses of Mexican-Americans, particularly Spanish speakers, significantly differs in the manner predicted from those of Anglos suggests that hypothesis two can be considered confirmed. More problematic psychosocial adaptation could also be reasonably inferred for Mexican-Americans from ethnic differences in scores for factors 1, 6, and 9. Results of the factor analysis also suggest, however, that Mexican-Americans and Anglos may use different psychological and social modes of coping. This is suggested by responses

to factor 10 and, even more so, for factor 9. As will be discussed later, certain coping styles may serve to mitigate the effects of difficult social circumstances better than others.

The adaptation of individuals and groups to their surroundings is a very complex matter. The sheer number of PSAI items and factors on which the responses of Mexican-Americans and Anglos differ suggests that the psychosocial adaptation of Mexican-Americans is more problematic. What is more instructive, however, is to examine WHY this is so, and HOW it occurs. The question of HOW Mexican-American and Anglo youths differ in their psychosocial adaptation will be examined in detail in chapter 6. In the next chapter, however, the question of WHY will be addressed. First, the historical process by which Mexican-Americans came to occupy a position of social and economic disadvantage in Corpus Christi will be reviewed. Following this, there will be presented a general overview of the contemporary distribution of wealth and power in the community. Then in chapter 6, in light of this discussion, the psychosocial adaptation of youths in this study, and the sociocultural milieu in which such adaptations occur, will be considered. Finally in chapter 7, the influence of psychosocial adaptation on blood pressure will be assessed in relation to other possible influences.

CHAPTER V

THE HISTORICAL, ECONOMIC AND POLITICAL CONTEXT OF INTERETHNIC RELATIONS

Historical Process Leading to the Contemporary Distribution of Wealth and Power in Corpus Christi*

The earliest European contact with Nueces County was made by the Spanish explorer, Alonso Alvarez de Pineda, who reconitered the Gulf coast in 1519. Nine years later, it is believed that Cabeza de Vaca may also have passed through the area. Despite these early contacts, what is now the Corpus Christi area remained virtually unknown and uncharted by Europeans until 1747. At that time, Jose de Escandon, the governor of Nuevo Snatnader**, ordered that the northern reaches of his province be thoroughly surveyed so that new settlements might be established. Escandon considered it essential that towns be established along the Nueces River, thereby extending effective Spanish

*Information presented in this section is derived from two sources: the Nueces County Historical Society's The History of Nueces County, published in 1972, and Paul Taylor's An American-Mexican Frontier, Nueces County, Texas, which was published in 1934.

**Nuevo Santander was the name of the Spanish province which extended approximately 200 miles inland from the Gulf of Mexico, from the Panuco River north to the San Antonio River.

control north of the Rio Grande and preventing encroachment into the area by the English. The area of South Texas that includes present-day Nueces County and Corpus Christi was surveyed by Joachin de Orobio Basterra. Contrary to Escandon's intention, Orobio Basterra's survey did not lead to the establishment of any settlements along the Nueces. Instead, Orobio Bsterra's account of the arduous journey north from the Rio Grande Valley is said to have discouraged potential settlers from coming to the area (Nueces County Historical Society 1972:27).

In the meantime during the 18th Century, a large number of cattle and horses originally brought by the Spaniards to their lands along the Rio Grande wandered north along the coastal plains of South Texas and Nueces County. In the late 1700s, a few Spanish settlers established ranches in Nueces County in order to exploit these wild herds. The first official land grants in the area were not made, however, until 1805, shortly before the Mexican War of Independence. Land grants were again issued in Nueces County by the Mexican State of Tamaulipas between the years 1928 and 1836. It was during this period that Enrique Villareal obtained the Rincon del Oso grant that encompasses much of present-day Corpus Christi.

Despite the intent of Spanish colonial and Mexican officials to build towns along the Nueces in order to establish effective control north of the Rio Grande, no such settlement was ever established. Even the ranches for

which land was officially granted were occupied only intermittently. Frequent Indian raids forced the ranchers to periodically retreat to the Rio Grande Valley. Finally, in 1831, in response to the Indian raids, the Mexican government built Fort Lipanitlan for the stated purpose of protecting the Lipan Apache of the area (ibid:33). Three years earlier, the first settlement on the Nueces had been established and was officially recognized by the Mexican government. The settlement, called San Patricio, was not a Mexican settlement, per se, however. San Patricio was established by two Irishmen under a colonization contract from Mexico.

What little foothold Mexico had established in Nueces County was essentially wiped out by the Texas Revolution of 1835-1836. As a result of the Texas Revolution, Mexican ranchers permanently retreated to the Rio Grande, even though the government of the Republic of Texas officially recognized their legal claim to property. Most tracts of land were either sold at a low price to Anglo-American settlers or otherwise acquired by Anglo-Americans--often under "unusual" circumstances. For example, in 1837 Henry Lawrence Kinney established a trading post on a plot of land near the mouth of the Nueces River on Corpus Christi Bay. The land pertained to the Rincon del Oso land grant of Enrique Villareal. Kinney's trading post prospered as a center for contraband. Even though Mexican ranchers had abandoned their land near the Nueces, the

territory between the Nueces and the Rio Grand was not officially relinquished by Mexico after the Texas Revolution. There was, in fact, no political body in control of the area. Kinney traded Mexican saddles and blankets for American guns destined for rebel Federalist forces who were intent on breaking away from the Mexican central government and establishing an independent Republic of the Rio Grande. Kinney's outpost survived attacks both by Indians and forces loyal to the Mexican central government.

One such attack was led by Captain Villareal, on whose land Kinney had established de facto ownership. Captain Villareal had orders to seize weapons and other goods bound for Federalist forces. Not coincidentally, Villareal was interested in evicting Kinney from his land. Through bluff, Kinney reportedly convinced Villareal that his trading post was protected by buried bombs, and that there was a large force within waiting to resist attack (ibid:46). Being thus misled, Villareal decided not to attack Kinney's trading post. Instead, attempting to make the best out of a bad situation, Villareal agreed to an offer made by Kinney to buy his land for a small price. Kinney subsequently applied for and received legal title to the land from the Mexican government. Ironically the government of the Republic of Texas considered Kinney's settlement on the Nueces to be proof of Texan control over the disputed territory. Thus began the history of the settlement that was to become Corpus Christi.

Kinney's trading post, sometimes called Kinney's Landing, functioned in a true frontier setting from the date of its founding until 1845, when Texas was annexed by the United States. Kinney married a Mexican woman, but was considered to be a suspicious character both by the governments of Mexico and Texas (ibid:48-50). Prior to annexation, the Mexican government, the rebel Federalists, the Republic of Texas, the Lipan Apache, and the Comanche all were forces to be reckoned with in the region. Kinney attempted to trade and profit from all of these groups whenever the opportunity presented itself.

The most significant change in the area that occurred between 1837 and 1845 was the loss of Mexican control over land in the Corpus Christi area. In 1845, President James Polk ordered General Zachary Taylor to definitively establish American control over all lands claimed by the United States, extending south to the Rio Grande River. In August of that year, Taylor sailed from Louisiana with a force of 4,000 men bound for Kinney's Landing on Corpus Christi Bay. It is reported that the American flag was first raised over Texas soil by a Lieutenant Chandler from Taylor's army on an island near Corpus Christi. In this manner Anglo-American control over the Corpus Christi area was both symbolically and effectively established. Taylor's troops remained camped at Corpus Christi until March of 1846 at which time they marched south along the coast toward Mexico. As might be expected, the landing of 4,000 soldiers

at Corpus Christi was beneficial to commerce, and put the settlement on the Anglo-American maps. Corpus Christi's importance as a trading center grew, and its fame was enhanced by letters such as the following from a well-known soldier in Taylor's army, Ulysis S. Grant:

A few days out from Corpus Christi, an immense herd of wild horses was seen directly in advance of the head of the column, and but a few miles off. . . . As far as the eye could reach to the right the herd extended. To the left it extended equally. There was no estimating the animals in it. I have no idea that they all could have been corralled in the State of Rhode Island or Delaware at one time [ibid:86].

The same could have been said for the herds of wild cattle which, like the horses, were descended from stock brought by the Spaniards. With the definitive establishment of Anglo-American control over the area, these herds were now open to exploitation by the newcomers from the north. Cattle became the mainstay of the region's economy during the second half of the 19th century. In 1846, only one year after the arrival of Taylor's army, numerous slaughterhouses and packeries already had been established. As the technology was limited for the preservation and shipment of meat over long distances to major markets such as New Orleans, the cattle were slaughtered primarily for their hides and tallow.

From 1850 through the 1870s, Nueces County was the scene of much fighting and disorder. Cattle roamed freely over the open ranges. While cattle barons such as Richard King and Mifflin Kennedy claimed as their private property immense tracts of range land and all the cattle on them,

Mexican, Indian, and Anglo-American "bandits" raided these herds, slaughtering them for their hides and horns. One of the more prominent of the Mexican "bandits" was Juan Cortina, known by the Anglos as "The Red Robber of the Border." Cortina later was to become a high-ranking official in the government of Benito Juarez in Mexico. The raids from Mexico by Cortina and other bands were important in fanning the already existing hatred of local Anglos against Mexicans (Taylor 1934:42). Despite the fact that many Mexicans fought and died alongside Anglo Texans in defense of the Alamo, a categorical hatred of all Mexicans by some Anglos had existed since the Texas Revolution. During the time of the cattle raids even loyal Mexican vaqueros who had worked for the cattle barons for many years were suspected of aiding the bandits. Texas Mexicans also were suspected of helping Black slaves to flee from their masters to a safe haven across the border (ibid:38). Anglo-Texan hatred of Mexicans peaked in the 1870s after a group of Mexicans reportedly raided several ranches at Nuecestown, located in what is now the northwest section of Corpus Christi. As a result of this raid, Anglo vigilante squads attacked and killed large numbers of Mexicans, most of whom were peaceful local residents (ibid:58). It is believed by some historians that the number of persons killed in retribution for the Nuecestown raid probably exceeded the number killed at the Battle of San Jacinto, the decisive battle of the Texas Revolution (Nueces County Historical Society 1972:83).

Shortly after the Nuecestown raid, two events occurred that helped to establish order and to diminish the level of violence in the area. First, the Texas Rangers established a post in the area for the purpose of protecting the property rights of the settlers, and eliminating random acts of violence (ibid:60). Second, and perhaps even more importantly, by the mid-1870s the open ranges gradually began to disappear. Richard King, the owner of a ranch that encompassed an area larger than the State of Rhode Island, led the way in fencing much of his domain. By the late 1870s, the Indian population also had been effectively decimated. By 1880, both random banditry and organized challenges to Anglo control over property and politics had been substantially eliminated. Although a number of Mexicans owned cattle in the 1850s and 1860s, few owned land in the area (Taylor 1934:179-190). The fencing of property by Anglo landowners in the 1870s had the effect of further reducing Mexican control over the wealth and resources of the Corpus Christi area.

From the 1880s to 1900 cattle continued to dominate the economy of Nueces County. The building of the infrastructure necessary to integrate the region into the economic and social order of the United States had begun. Rail lines were constructed and efforts were made to improve facilities for shipping. Capital entered the area from the north, and increasing numbers of Mexican laborers came from the south to build the rail lines and perform the

physical labor required by the expanding economy of the area. As Mexicans came to be perceived as no longer posing a threat to the social order, overt hatred of Mexicans gradually began to wane (ibid:126).

By 1900, the period of dominance by the cattle industry in the economy of Nueces County had come to an end. Ranchers were finding that the combination of periodic droughts and overgrazing had caused the formerly rich grasslands to become overrun with brush. With the newly constructed rail lines in place, land speculators brought farmers from the midwest into the area. "Land Special" trains lured prospective settlers with promises of a bale of cotton per acre. After Mexican laborers had cleared the brush from the land, the newly arrived midwestern farmers found the soil around Corpus Christi to be ideal for cotton production. As stated by the History of Nueces County:

The black soil radiating from Corpus Christi in a 50 mile circle is said to form the largest area of high grade black cotton growing soil on the Texas coast. There are nearly 200,000 acres of it stretching out in a single body. The soil is four feet deep. Underlying the black soil is an impervious clay subsoil, enabling the land to hold moisture. Crops are assured even when rain is slight during the growing season [Nueces County Historical Society 1972:8].

By 1900, the number of cattle in Nueces County had been reduced to only 19,000 from a peak of 194,000 in 1890 (ibid:92). Part of this decline in the number of cattle was due, however, to a reduction of the land area of the county. By 1929, Nueces County produced more cotton than any other county in Texas. In 1930, Nueces County led the nation in cotton production. "King Cotton" now reigned

supreme over the area. During this period of high production, cotton cultivation was very labor intensive. Most of the labor required was seasonal, but some manual labor in the cotton fields was required year round. The great majority of agricultural laborers were Mexican.

During the August cotton harvest, it is believed that a few hundred additional Anglo and Black laborers came to work in the fields of Nueces County, as compared to an additional 10,000 to 15,000 Mexican laborers (Taylor 1934:99). The census of 1930 was the first to provide a separate enumeration of the Mexican population of the county. Data from the 1930 census are presented in table 22.

TABLE 22

ETHNIC COMPOSITION OF NUECES COUNTY: 1930

	#	%
Mexican*	23,276	45.0%
Anglo	25,863	49.9%
Black	<u>2,640</u>	<u>5.1%</u>
Total	51,779	100.0%

Source: Taylor 1934:92

*Only first- and second-generation Mexican citizens were listed as Mexicans.

With cotton production at its peak in 1930, the population had more than doubled from a figure of 22,807 in 1920. At the peak of the cattle era in 1890, the population was listed as only 10,434.

The vast majority of Mexicans residing in Nueces County in 1930 were laborers--many of them migrant farm workers. Most Mexican residents who lived in the city also were manual laborers. Most retail stores of the day employed some Mexicans, mostly women, as clerks. There were a few Mexican professionals and entrepreneurs, but most Mexican-owned enterprises served an exclusively Mexican clientele. Most Anglos in 1930 reportedly considered themselves to be superior to Mexicans (ibid:250-277). Anglos of the day even were divided in their opinions as to whether Mexicans should go to school (ibid:195). Many Anglo farmers believed that the more schooling Mexican laborers obtained, the less they would be willing to work (ibid:196). Nueces County schools enrolled Mexican students in order to obtain a greater amount of money allotted by the State. The allotment was on a per pupil basis (ibid:200). Mexican students were seldom encouraged and often discouraged from attending classes. With the Mexican students enrolled, but not attending classes, more money was available for the education of Anglo students

Anglos residing in the city of Corpus Christi were said to have been more liberal than their counterparts residing in rural areas (ibid:202). Most Anglos of Corpus Christi reportedly believed that Mexicans should attend school. But when Mexican students were in the presence of Anglos, they were likely to be hazed and called derogatory names such as "greaser" and "pelado" (ibid:211).

Students were punished for speaking Spanish on school property. Such rules against the speaking of Spanish were not eliminated until the late 1960s.

Few Anglos of 1930 approved of the intermarriage of Anglos and Mexicans (ibid:267). The prohibition of miscegenation, however, did not deter Anglo merchants from avidly seeking the business of Mexican workers. Anglo merchants reportedly looked forward to a great surge in commerce during the cotton harvest. Anglo employers expressed the opinion that the best way to deal with Mexican employees was to treat them "firmly but with kindness" (ibid:132). In so doing, it was believed that most Mexicans would become very loyal and devoted workers. It was widely believed by Nueces County Anglos that the Mexican "knew his place" and would never try to engage in social relations with the Anglo as an equal. One Anglo was quoted in 1929 as saying, "The Mexicans have no desire for social equality. They keep their place in fine shape," (ibid:261). Another Anglo was quoted as saying, "The Mexicans are not aggressive socially. They would rather be anything else than be embarrassed," (ibid:261).

Taylor inquired further of Nueces County Anglos as to why they did not consider Mexicans to be their equals. Many provided explanations based on a belief in the superiority of "the white race" (ibid:203). Some even cited the Bible as the basis for their beliefs (ibid:255). Some said that they did not object to the "light skinned Spanish"

so much as the dark Mexican Indian (ibid:254). Commenting on the widespread belief in the inferiority of the Mexican population of the Corpus Christi area, one Anglo informant noted that the Mexicans of Corpus Christi were not like the Mexicans of Laredo (ibid:302). In the Laredo of 1930, there were many "prominant" Mexican citizens. The informant believed that there were no Mexicans of any importance in Corpus Christi. Since there were few light-skinned Mexicans in the Corpus Christi area and almost all were poorly educated laborers, local Mexicans were considered uncultured and inferior as a group.

It is clear then, that in the Corpus Christi of 1930, being Mexican implied social and economic disadvantage. Between the 1830s when William Kinney moved to the area and married a Mexican woman, and 1930, there developed a caste-like stratification system. In the eyes of Anglo-Texans, Mexicans had moved from a position of equality prior to the Texas Revolution to the status of hated adversary during the Texas Revolution and Mexican War, to loathed outlaws during the early cattle years, and finally to the position of subserviant laborers during the cotton years of the early 20th century. The combination of lack of control over the means of production, racism, and a history of interethnic and international conflict locked the Mexican of Corpus Christi into a position of social inferiority and disadvantage. Increased immigration during the Mexican Revolution, and the active recruitment of

Mexican workers by labor contractors tended to perpetuate the identification of Mexican cultural identity with inferior social and economic status.

Through the course of history Mexicans, as a group, had been excluded from gaining control over the land and resources of the Corpus Christi area. The only factor of production which the Mexican controlled was his own labor. Continuing immigration from Mexico and active labor recruitment guaranteed that their work would be poorly remunerated. Another factor hindering the ability of Mexicans to obtain higher-paying jobs was a lack of education. From the account of Taylor, formal and informal barriers prevented Mexicans in the Corpus Christi area from obtaining more than a minimal level of schooling. Mexicans and Blacks attended different primary schools than Anglo children. According to Taylor, these schools were clearly inferior (ibid:216). Many school board members were agriculturalists who pursued a deliberate policy of preventing Mexican laborers from becoming educated. Lack of recognition of the Spanish language and Mexican culture, formally by the school system and informally by other students, undoubtedly discouraged many Mexican pupils. In order for a Mexican student to succeed in school, that student not only had to master the academic lessons but the social lessons as well. Even if the Mexican were to fully adopt the ways of the Anglo, it is still unlikely that he or she would have been perceived and treated by many Anglos as an equal.

A lack of social connections, or "palanca" undoubtedly was a third factor that prevented the Mexican from gaining social and economic equality. Since Anglos of the early twentieth century considered Mexicans, as a group, to be socially inferior, it is unlikely that a Mexican would have been allowed to obtain a position of authority over an Anglo. From Taylor's account, it appears that interethnic relations were mostly characterized by paternalism and patronage. To attempt to deal with the Anglo as an equal was likely to lead to social isolation for both the Anglo and the Mexican. In the words of an Anglo farmer:

If you are an American who invites a Mexican to his front door and into his house, you will see a man who the Mexicans and the whites don't have anything to do with [ibid:251].

In addition to barriers to mobility that were posed by Anglos, there were certain pressures exerted upon the upwardly mobile Mexican from within his or her own cultural group as well. If one were to have a chance of being considered an equal by the dominant elements of society in Corpus Christi, to speak Spanish, maintain certain Mexican customs, and generally to identify with the Mexican community posed a handicap. Yet to abandon these cultural characteristics tended to isolate one from one's own social and cultural roots. The League of United Latin American Citizens (LULAC) was founded in Corpus Christi in the late 1920s largely as a response to this dilemma. LULAC was composed of relatively affluent members of the Mexican-American community. It addressed the problem of the

reluctance of Anglos to accept Mexican-Americans as equals by promoting the use of English, and by placing an extreme emphasis on patriotism (ibid:243). To maintain legitimacy within the Mexican community, LULAC lobbied for the civil rights and equality of Latin Americans as citizens. The sad fact, however, was that in the 1920s and 1930s, there were few Anglos who were willing to "grant" Mexicans the right to be treated as equals under any circumstances.

The New Economic Era: 1930 to the Present

While cotton cultivation was at its peak in the 1920s and 1930s, there were observed the first inklings of a new economic era in Nueces County. First natural gas and then oil were discovered and put into production in the Saxet Field, located in the northwestern portion of the city. The discovery of natural gas and oil spurred the development of the petrochemical industry and, to accommodate it, a deepwater port for ocean-going freighters. The port, dredged to twenty-five feet, was opened in 1926 (Nueces County Historical Society 1972:168). In the first years, the port mostly handled the shipment of cotton. By 1934, the first large industrial plant belonging to the Southern Alkalai Company was opened. In the years to come, plants were constructed to process crude oil into fuel, plastics, and industrial chemicals. The availability of abundant and cheap energy in the form of natural gas, along with low-labor costs and good port facilities also attracted industries not directly related to the petrochemical industry.

As the industrial base of the city expanded, cotton production was becoming increasingly mechanized and gradually diminished in importance as a source of employment. The Depression seriously cut into the profitability of cotton cultivation as well. In place of cotton, many area farmers began to cultivate grain sorghum, a crop requiring little manual labor. Today, cotton and sorghum production remain very important in the local economy, but agriculture no longer is a major source of employment. Presently, the port of Corpus Christi is the eighth largest in the country. According to the Chamber of Commerce, port-related industries account for nearly 50 percent of the area's nonfarm income. Thirty-seven percent of all employed persons work in port-related jobs.

The single most important source of employment in the area, however, is the military. In 1941, the Corpus Christi Naval Air Station was opened (ibid:159). At the time, it was the largest such facility in the world. Since the end of World War II, the importance of the Corpus Christi facility has been surpassed by the Naval Air Station at Pensacola. Nonetheless, the Naval Air Station continues to be a very important source of jobs. Together with an army helicopter repair depot, the Naval Air Station has played a critical role in making available to Mexican-Americans and Blacks a significant number of jobs with reasonably high wages.

Long-time residents of the city have indicated that until recently, some of the better-paying jobs in

private industry were not available to Mexican-Americans and Blacks. Civil rights legislation undoubtedly has done much to make these jobs more available to non-Anglos. Together, military employment and high-paying port-related jobs have provided far greater opportunities for the economic advancement of Mexican-Americans and Blacks than were available during the cotton era of the 1920s and 1930s.

The last important element of the contemporary economy is tourism. Padre and Mustang Islands lure thousands of tourists to the area each year, creating a demand for labor in restaurants, motels, and retail establishments. Although most of these jobs pay poorly, the tourist industry has become an important source of employment.

The Distribution of Power and Wealth in Contemporary Corpus Christi

The new foundation of the area's economy has enabled many Mexican-Americans to obtain a degree of economic security that was available to few fifty years ago. Along with increased economic security has come greater social equality. Today, it is certainly the exception rather than the rule to find an Anglo who would openly admit to the opinion that Mexicans are inherently inferior to Anglos. Unlike Taylor's experience in 1929, I have heard only a very few unabashedly racist comments by Anglos about Mexican-Americans in three years of residence in Corpus Christi. Unfortunately, overtly racist comments about Blacks are somewhat less uncommon, but certainly not as pervasive as apparently was the case in 1929.

According to the 1970 census, there were only 939 farm workers out of a total of 30,078 employed Hispanics over sixteen years of age in Nueces County. The substitution of permanent employment in the city for low-paying temporary agricultural employment has undoubtedly been a factor in eliminating the caste-like stratification system of the 1920s and 1930s. Although there has undoubtedly been improvement in the social and economic status of Mexican-Americans since 1930, it cannot be said that the Mexican-American's position of disadvantage in Corpus Christi has been totally eliminated. Data from the 1970 census and my own study presented in chapter 3 indicate that the current status of Mexican-Americans in the community is still greatly influenced by the heritage of economic exploitation and social subordination. The following economic data underscore this point.

According to the 1970 census, only 12.6 percent of Hispanics in Nueces County were categorized either as professionals, technical workers, managers or administrators. Almost three times as many Anglos (32.8 percent) hold such positions. Figures from the 1970 census regarding the number of families earning less than the federal poverty guideline demonstrate the high prevalence of poverty in the area, especially among Mexican-Americans and Blacks. This is shown in table 23. It is interesting to note that although the unemployment rate in Nueces County consistently has been below the national average, the percentage of

TABLE 23

FAMILIES BELOW THE FEDERAL POVERTY GUIDELINE

	# of Families Below Poverty Guideline	% of Families Below Poverty Guideline	Total # of Families
Anglo	2,228	6.8	32,777
M.A.	6,639	30.6	21,681
Black	865	33.5	2,581
Total for Nueces County	9,732	17.1	57,039

families, especially Mexican-American and Black, earning less than the federal poverty guideline is very high. In May of 1980, the unemployment rate for Nueces County was 5.4 percent, as compared to a national rate of 7.8 percent (Texas Employment Commission). In contrast to this favorable statistic is the fact that Corpus Christi was ranked 204th in per capita income among the 266 standard metropolitan statistical areas in the nation. When one considers the relatively low unemployment rate along with the high incidence of poverty and low per capita income, these figures suggest that the economy of Corpus Christi is lacking a sufficient number of "good" jobs. Employment generally is not hard to find, but many of the jobs that are available do not pay enough to approach national income norms. While 30.6 percent of Mexican-Americans earned less than the poverty guideline, more than one-half of all Mexican-Americans were not far from poverty. Fifty-two and

eight-tenths percent of Nueces County Mexican-American families earned less than 150 percent of the poverty guideline.

Power and Politics

In the terminology of Corpus Christians (people of Corpus Christi), the city is divided into two "sides." The West Side is populated by Mexican-Americans and Blacks. The South Side is populated primarily by Anglos, and a small but growing number of relatively affluent non-Anglos. The terms South Side and West Side reflect the folk perception of the city's political and economic divisions. Wealth and political power are overwhelmingly concentrated on the South Side. The term West Side roughly corresponds to what elsewhere might be called the "barrio" or the ghetto.

It is a recent tradition in Corpus Christi municipal elections that groups of candidates run together as slates or ad hoc parties for the mayoralty and the accompanying seats on the city council. These ad hoc parties in recent years have been carefully and deliberately balanced in terms of ethnicity. Typically, a slate of candidates in the municipal elections would include an Anglo candidate for mayor, along with two Mexican-Americans, one Black, and three more Anglos for city council seats. South Side business interests generally have been successful in placing their slates of candidates in control of city government. In this manner, Mexican-American and Black candidates from the "establishment" backed slates have regularly been elected

to the city council. Typically, these "establishment" backed candidates have been opposed by more liberal Mexican-Americans and Blacks. The Mexican-American and Black candidates from the "establishment" slates win the elections by obtaining a small portion of the West Side vote, and the majority of the South Side vote.

In 1978, after the Anglo mayor resigned to run for Congress, one of the "establishment" backed Mexican-Americans on the city council was appointed to take his place. In this manner, for the first time in its history, Corpus Christi had a Mexican-American mayor. As of 1980, this mayor had resigned, and only one Mexican-American was left on the city council. This individual is a conservative Republican who received very little support from the predominantly Mexican-American voting precincts of the West Side. The "liberal" slates of candidates for mayor and city council generally have relied on the support of West Side voters, labor unions, and endorsements from figures associated with Mexican-American organizations such as LULAC, and the American G.I. Forum. These candidates typically favor improved social services, more recreational facilities for youth, especially on the West Side, and the appointment of more non-Anglos to administrative positions with the city.

The "establishment" slates that have dominated city government have emphasized economic growth in whatever manner and location that the market dictates. The West

Side has been untouched by the patterns of economic growth and development within the city. For example, several years ago the city council approved a plan to construct a highway overpass directing traffic from Laredo and the municipal airport to the South Side business strip. In their deliberations, councilmen emphasized the need to have a more scenic entrance into the city. The project received little public attention at the time. The original route directed traffic through the heart of the West Side and ultimately to the downtown business district. Now that the project has been completed, small businessmen from the West Side have been complaining that the overpass has led to a decline in business and will accelerate the deterioration of the area. Downtown Corpus Christi already is badly deteriorated due to the loss of business to the South Side.

Another policy pursued by the city government has been to attract business to the area by not annexing the industrial park of the port. Much of this area is immediately adjacent to downtown. The port area contains millions of dollars in potential tax base. The city council's philosophy has been that the economy of the area would most benefit by creating "an attractive business climate." In effect, this has meant that no municipal taxes have been collected from industry. Meanwhile, local leaders boast of how Corpus Christi's low taxes have attracted industry away from northeastern and midwestern cities.

If the West Side Mexican-American community has had little representation at city hall, its representation on the board of the Corpus Christi Independent School District (CCISD) has been no better. A major interest of the board over the past decade has been the fight against numerous decisions of the federal courts. The courts have found that the district had been providing separate and unequal education to minorities. In accordance with this finding, the courts mandated the establishment of a busing program. Busing has prompted many Anglo families to move to outlying parts of the city or to surrounding towns which do not pertain to the Corpus Christi Independent School District. Frequently, real estate listings in these areas emphasize the fact that their schools are not part of the CCISD. Busing has also prompted the establishment of "Christian Schools," and has increased enrollment in already existing Catholic parochial schools. At present, busing is opposed by most Anglos and many Mexican-Americans. Supporters of busing contend that it may be the only way that Mexican-American and Black children will have the same educational resources available to them as are available to Anglo children.

As of May 1980, school board elections have been indefinitely postponed by a federal court order. Because of the underrepresentation of Mexican-Americans and Blacks on the school board, the existing system of electing school board members in "at large," city-wide elections has been

found to be discriminatory against Mexican-Americans and Blacks. It is quite possible that the courts will soon rule that elections for the school board will have to be conducted on the basis of single-member districts. A candidate for a seat on the school board or a city council position would have to live in his or her own precinct and would be elected only by the residents of that precinct. Finally, the U.S. Department of Education has recently found that the CCISD's bilingual education program is not in compliance with what is mandated by law. The Department of Education is currently withholding federal funds from the district for this reason.

There are several other school districts in the Corpus Christi metropolitan area besides the Corpus Christi Independent School District. One of these districts encompasses a small portion of the city's West Side. The school board of this small district is a rare example of a political body in which West Side residents can represent their own interests.

In contrast to a general lack of representation on the school boards and the city council, Corpus Christi Mexican-Americans recently have had more success in obtaining representation in the State Legislature. During the 1970s, the first Mexican-American State legislator was elected from the area. As of 1980, two of the city's three state representatives are Mexican-American, as is the State Senator. Unlike most Mexican-Americans elected on "establishment" slates to the city council or school board, the

state legislators have received widespread support from the West Side. It should also be noted that the first Mexican-American sheriff in the history of Nueces County was elected in 1976. Nonetheless, with the exception of the board members of the small, West Side school district, no Mexican-American resident of the West Side has ever been elected to public office. Whether or not a Mexican-American official has received the support of West Side voters, he has always lived on the South Side or some other affluent area.

In sum, it may be concluded that poor Mexican-Americans and Blacks of West Side Corpus Christi have little power over the political bodies that affect their lives. On the other hand, more affluent Mexican-Americans recently have had some success in obtaining position of power. A few of these politicians have advocated the causes of West Side residents in the State Legislature. It is clear that in the politics of contemporary Corpus Christi, being Mexican-American or Black, in itself, no longer poses a major barrier to obtaining political power. In order to obtain the support of the monied "establishment," however, one runs the risk being labeled as a "Tio Taco," or "Vendido." On the other hand, for a Mexican-American politician to specifically act in the interests of poor Mexican-Americans would almost certainly eliminate the possibility of "establishment" support. Mexican-American politicians who make a distinction between the interests of the poor

and the existing policies of the schools, municipal or state government are accused of engaging in "divisive politics." The more that a politician acts in the interests of poor Mexican-Americans, or even more so, is a poor Mexican-American, the less acceptable is that politician likely to be to the "establishment."

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CHAPTER VI

BEING A TEENAGER IN CORPUS CHRISTI

As was noted in chapter 3, it is a basic tenet of this study that the psychosocial adaptation of Corpus Christi adolescents should be examined in the broad perspective of society and culture. As has been argued by Mechanic (1974:35), "Much of the confusion in the stress literature results because stress is frequently seen as a short-term single stimulus rather than as a complex set of changing conditions that have a history and a future." In the last chapter, we looked at the history of the "complex set of changing conditions" as well as the contemporary distribution of wealth and power in Corpus Christi. In chapter 4 it was established that the blood pressures of Mexican-American youths are higher than those of Anglos, and that the psychosocial adaptation of Mexican-American youths, especially Spanish speakers, is more likely to be problematic than that of Anglos. This was determined by a simple count of the number of PSAI items and factors on which the responses of Mexican-Americans and Anglos differed. Familiarity with the history of the area and knowledge of contemporary political and economic conditions in

Corpus Christi helps to explain why Mexican-American youths might be expected to face greater difficulties in their psychosocial adaptation than Anglo youths. In this chapter, the question of how this occurs in the daily lives of Corpus Christi teenagers will be examined. More specifically, we will address the following questions: (1) What are the problems that Mexican-American youths are more likely to face in their daily activities? and (2) How do Mexican-American youths adapt socially and psychologically, given the configuration of opportunities, resources and challenges which they face? In that this research project was conducted in the context of the schools, the types of problems and adaptations to those problems within that context will be emphasized.

The Subjective Importance of School

Mechanic and Lazarus are among those who have emphasized the necessity of considering the subjective importance of a problem when attempting to study personal or psychosocial adaptation. In this regard, in studying the psychosocial adaptation of teenagers to the school environment, it is necessary to know whether one's performance in school is subjectively important. If doing well in school is not subjectively important to one, then success or failure is not likely to be a matter of great concern or potential cause of problematic psychosocial adaptation.

As was indicated in chapter 4, a comparison of the scores of Mexican-Americans and Anglos for factor 8 shows that Mexican-Americans were just as likely as Anglos to identify with the official norms of the schools than were Anglos. They were just as likely as Anglos to agree with the statement: "How well I do in school is very important to me" (item 8). They also were just as likely to disagree with the statement, "Much of what I am expected to do is a waste of time" (item 6). Finally, Mexican-Americans were significantly more likely than Anglos to feel that trying to learn what the teachers present in class is worthwhile (item 41).

When I asked students in interviews why school was important to them, the great majority of Mexican-Americans and Anglos indicated that it was important for getting a good job. In the words of a Mexican-American girl at Plainview, "I come to school because I don't want to work at Haggar [low-paying textile factory]. Lots of kids here quit school and then go to work at Haggar or H.E.B. [grocery]. Some who graduate even end up working in jobs like that. I want a job where I can learn things." When students were asked, "What kind of job would you most like to have when you finish your schooling?" over 50 percent of Mexican-Americans and Anglos wanted some kind of white collar or managerial job. This is illustrated in table 24. English-speaking Mexican-Americans were most likely to desire a white collar job and least likely to want a blue collar job. Interestingly, Anglos were the

most likely to express a desire for a blue collar job. Most of the blue collar jobs that were specified by Anglos were high-paying skilled jobs such as are held by the fathers of many Anglo students.

TABLE 24
OCCUPATIONAL GOAL

	Spanish- Speaking Mex.-Am.	English- Speaking Mex.-Am.	Anglo*
Blue Collar	36 18.5%	7 9.3%	45 20.9%
White Collar or Managerial	101 51.8%	51 68.0%	129 60.0%

*Column percentages do not add up to 100% because students indicating no preference, or who desired a service, clerical, or some other sort of job were not included.

Success in School: Objective and
Subjective Criteria

It is apparent, then, that most teenagers in all segments of the community believe in the importance of school, think it is worthwhile, and desire jobs that require an advanced education. Some teenagers are more successful than others, however, in progressing toward their stated goals. This is suggested by the responses shown in table 25, of students to the question: "What grades do you usually get on your report cards?"

- (1) As & Bs
- (2) Bs & Cs
- (3) Cs & Ds
- (4) Ds & Fs

TABLE 25
USUAL GRADES IN SCHOOL

	Spanish-Speaking Mex.-Ams.		English-Speaking Mex. Ams.		Anglos	
As & Bs	55	19.2%	14	14.7%	144	48.6%
Bs & Cs	141	49.1%	50	52.6%	89	35.5%
Cs & Ds	78	27.2%	26	27.4%	31	12.3%
Ds & Fs	13	4.5%	5	5.3%	9	3.6%

There is little difference in the grades reported by Spanish- and English-speaking Mexican-Americans. Almost 50 percent of Anglos, however, reported getting mostly As & Bs on their report cards as compared to less than 20 percent for Mexican-Americans. Fifteen and nine-tenths percent of Anglos indicated that they got mostly Cs & Ds, or Ds & Fs, while over 30 percent of both Mexican-American groups reported getting such grades.

Another way of pursuing the question of success in school is to examine data on the percentage of students entering high school who actually finish. One way to do this is to compare the size of the entering class of freshmen (or sophomores; Central High School was the only three-year school. The other schools were four-year institutions) with the size of the senior class. At Plainview, there were 286 students in the freshman class. In contrast, there were only 209 graduating seniors, a decrease of

27 percent. Some variation in the size of the freshman and the senior class could, of course, be due to demographic changes. There is no reason to expect such a large change in the population over only four years, however. The senior class at Laguna High School is comprised of only 116 students, as compared to a freshman class of 276 students. At Laguna High, less than half of entering freshmen may be expected to graduate. The freshman class at Sam Houston had 215 students as compared to only 165 seniors--a decrease of 23 percent. A closer examination of the list of students in the freshman and senior classes at Sam Houston indicates that there is a disproportionately large decrease in the percentage of Spanish-surnamed students in the composition of the senior class. Twenty-two percent of the students in the freshmen class had Spanish surnames as compared to only 13 percent of the seniors. According to a councillor at Central High School, approximately 10 percent of sophomores entering that school will drop out prior to graduation.

Not only were Mexican-American students, especially Spanish speakers, in a disadvantageous position in terms of their scholastic performance, but there is also evidence to suggest that they are more likely to perceive their psychosocial adaptation to the school environment as more problematic. Mexican-Americans were more likely to indicate that they "feel that they are just not making it in school" (item 7; they are "having trouble figuring out

what it is that the teacher wants them to do" (item 43); they do not "understand what to do and how to act in order to do well in school" (item 9), and they are less likely to "fit in and relate well to people at school" (item 10). It is important to note that this tendency for Mexican-Americans to perform less well in school and have more problematic psychosocial adaptation in the school environment is reflected in more general attitudes regarding the future. Mexican-American youths are less confident that they will have as much success in life as other members in their family have had (item 54), and are more likely to feel that there is always something that keeps things from turning out right for them (item 58).

In sum, it is clear that the pattern of political and economic disadvantage of Mexican-American adults is reflected in the experiences of their children in the school environment. While Mexican-American youths place great importance upon their school performance, they are more likely than Anglos to perceive that they are not "making it" at school, and don't know what they have to do in order to succeed. Further, Mexican-Americans, especially Spanish speakers, are more likely to feel that things are not turning out well, and that they are not likely to turn out well in the future. Why is it, then that this pattern of disadvantage for Mexican-Americans, that has existed for many years, and continues to exist for Mexican-American adults, should continue to manifest itself in the adaptation

of Mexican-American young people to the school environment? Why is it that Mexican-American teenagers are less confident that things will turn out well for them?

There are a number of possible explanations, most of which, it will be argued, are more complementary than contradictory. Some explanations that are commonly offered include racial prejudice, lack of motivation, and "family problems." The position to be taken here, however, is that there is an underlying economic influence that must be taken into account when considering all of these explanations. Let us now examine some of the factors affecting the adaptation of youths from various segments of the community to the school environment.

Prejudice

From Taylor's description of schooling in the 1930s, the accounts of adult residents of the city today and recent court rulings, it is clear that there has been a history of prejudicial treatment against Mexican-Americans. On the basis of my observations, however, it appears that the extent of such categorical discrimination is now greatly decreased. The days when school policy prohibited the speaking of Spanish on school property are gone. The court-ordered busing program was implemented largely for the purpose of eliminating inequalities in the distribution of educational resources within the Corpus Christi Independent School District. Differences in the quality of school buildings and educational programs offered on the West Side and the South Side have been greatly diminished.

In two of the schools, Laguna and Plainview, it is difficult to imagine how overt racial prejudice could directly affect the educational performance or psychosocial adaptation of students. There are very few Anglo students at either school. The great majority of teachers at Laguna are either Mexican-American or Black. Approximately one-half of the teachers, the principal, and other high-ranking administrators at Plainview are Mexican-American. On the other hand, evidence of racial prejudice was occasionally encountered at Sam Houston and Central High Schools. It is the impression of the researcher, however, that blatant racial prejudice is not very common at these schools either. Nonetheless, I did hear some bigoted comments at these schools. It would appear that racial prejudice on the part of teachers was more often directed at Blacks than Mexican-Americans.

While working in the schools, I spent at least one class period per day in the teachers' lounges and often ate lunch with teachers. As they got used to seeing me, teachers became more inclined to freely express their opinions directly to me, or in conversations with other teachers when I was present. One day I got into a conversation with a man who had taught chemistry at the same school for many years. The man had heard that I was an anthropologist conducting research at the school. As I was eating lunch with some other teachers, the man sat down to join us. He opened the conversation with what

I at first thought was a cynical comment about students not unlike those often heard in teachers' lounges and lunch rooms.

"Oh--you must be the guy who has come to study all of the anthropoids here."

I retorted in a joking manner, "So you think that some of your students are not quite fully human? Or maybe that some are more directly related to apes than others?"

To my amazement, he replied in a totally serious manner, "Yes, isn't it obvious?"

I replied that I did not think that it was at all obvious, and that it would be very difficult, indeed, to find an anthropologist who would agree with the position that some human beings are more closely related to apes than others. The teacher then went on to argue that there was an "obvious physical resemblance" between Blacks and apes. He cited the poor performance of Blacks on intelligence tests, and the "facts" that they are still running around with loin cloths and spears, and had never built any great civilizations as proof of their inherent inferiority.

At this point in the conversation, an ever-enthusiastic and positive health teacher with whom I had been working took issue with the chemistry teacher.

"But hey, Sam," the health teacher said, "those Blacks sure know how to run a 9.1 hundred [100-yard dash]."

The chemistry teacher responded dryly,

"Well, that just proves their animal nature."

Toward the end of the conversation, the teacher made this final defense of his position:

"Anthropology, psychology, sociology--they are speculative sciences. We in the quantitative sciences know that these differences exist [genetic differences affecting I.Q.]."

I finally asked him his opinion about Mexicans. Did he believe that they also were inherently inferior? He indicated that he thought that they were, although they were not as inferior as Blacks. Much depended, in his view, on the relative proportion of American-Indian and European ancestry.

At the other school with a large number of Anglos, I listened one day to a coach who seemed to share the views of the chemistry teacher. The coach was discussing how Blacks seldom made good quarterbacks and, of all the Black players in the National Football League, none was a starting quarterback.* The reason to him was obvious: "Blacks are good athletes, but they ain't got no smarts." Fortunately, there were few Black students at either of the schools where these views were expressed.

During the three-year period in which I worked in the schools, I heard only a few comments indicating categorical prejudice against Mexican-Americans. For one teacher, his dislike of "Meskins" was a major factor

*This is no longer the case.

influencing his decision to leave the Corpus Christi area for a northern part of the state. Referring to his decision to leave the school where he had been teaching and move out of South Texas, the teacher state:

The people are a lot friendlier up there [in a northern part of Texas]. There are just too many Meskins (sic) here. I'm sorry, but I just don't like them. I don't have anything against them as individuals, but as a group--nope--no way! I mean, they got Meskins up there, but it's not like here. There aren't so many up there, and they all work for farmers--you know what I mean?

The coach apparently meant that he did not have anything against Mexican-Americans as individuals, as long as they kept their place and didn't challenge or conflict with Anglo-Texan culture as a group. Similar sentiments were expressed at the other largely Anglo school. One day several Anglo staff members were eating lunch when one of the school's senior teachers began talking about "the good old days" when the school was nearly all White. There was no busing, no "minority programs" and teachers didn't have to worry so much about "picky rules." He made a special point of telling me that he was not a racist but was opposed to a lot of the "minority programs," especially affirmative action hiring practices. At this point, a second teacher began to express his resentment of "minorities" in much less-guarded terms.

You know, I'm getting to dislike Meskins more and more every day. I'm taking a "minorities" course at the college from this guy, Medina--you know, the guy they just elected to the school board. I had to miss a class one night so I asked him for his notes. You know somethin'--some of those damned notes were in Spanish! Hell, he goes on about how Meskins get

shafted this way and that way and so on--Hell--they elected this guy to the school board!

It must be emphasized that it is my impression that these comments expressing White racial superiority or categorical prejudice against Mexican-Americans were more the exception than the rule. Consistent with my impression is the fact that few students gave any indication that they believed that their teachers were prejudiced or racist. Interestingly, the few comments made to me by students regarding racist teachers referred to the very same few individuals who made the comments reported here. It is possible, of course, that other teachers were simply more guarded or were afraid to express their true opinions. In fact, the teacher who told me that he "was gettin' to dislike Meskins more and more every day" approached me two days afterwards with a very worried look on his face: "What was it you said you were doing here at this school?" he asked. Nonetheless, I feel that such overtly bigoted attitudes against Mexican-Americans and Blacks are not at all representative of most teachers at any of the four schools. Negative opinions about bilingual education and other "minority programs" are very common, but do not necessarily reflect categorical racism or prejudice.

Disconformity with the Operational Norms of the School

As was discussed above, Mexican-Americans, especially Spanish speakers, do not perform as well academically, on average, as Anglos. It is argued that largely because of

this, many teachers form negative opinions of students whom they perceive as not conforming to official school norms. It is not unusual that in one way or another, the teachers' disdain for their students is perceived by those students. It is certainly true that a number of Anglo students do not conform to the expectations of their teachers and are also subject to their criticisms. I observed, however, that Spanish speakers were far more likely to be perceived as being either disinterested, unwilling, or unable to conform to school norms. It will be argued that this perception by teachers, whether or not it is correct, can itself contribute to poor academic performance and problematic psychosocial adaptation for Mexican-American students.

One of the most common topics of discussion in teachers' lounges and lunchrooms has to do with complaints about students. Comments such as the following could have been heard at any of the four schools where I worked: "Do you know what that Ruben did during my third period today?" "Juana is getting to be a real nuisance. All she does is disturb the class." "These kids don't care about school. All they're interested in is sex and drinking." "If you added together the I.Q.s of both those kids, you could figure it up on the fingers of your two hands." Although many teachers were not especially prone to complain about their students, for some complaining seemed to be their favorite pastime. On the basis of my interviews with

with students, those who were being criticized in the lounges usually knew what their teachers thought of them.

Whether or not a teacher was prone to complain about his or her students, most with whom I talked believed that students who do poorly in school do so because of a "bad attitude." This "bad attitude" or "lack of motivation" on the part of the student is thought to usually be derived from "family problems," or a poor home environment. One teacher at Plainview described her perception of the home environment of some of her students "on welfare" in the following way:

The parents of these kids don't work. They see their parents staying up late, watching television and eating junk food, so they do the same. When the kids see their parents not working they don't have any incentive to do their school work, either. Some of these families have come here because it is easy to get on welfare. Everybody's on welfare here. Just about anybody can get on. They don't check very closely to see who really needs it. I don't care what color they are; it is demeaning for a person to receive hand-outs.

This teacher seemed to be saying that the "welfare hand-outs" demean students and their families. "Welfare" is the basic problem, rather than the underlying poverty and underemployment. Other teachers cited divorce, promiscuity, and alcoholism as common family problems contributing to the supposed poor motivation of students.

Given the poor scholastic performance of so many of their students, teachers need to feel that they understand the reasons. To place the blame anywhere but on the students and their families would raise the possibility of some unsettling alternative explanations. Few

teachers wish to believe that their students' problems are due to their own poor teaching, fundamental flaws in the educational system, or the political and economic system in which most are firm believers. The easiest explanation, then, is that their students do poorly in school because they don't care or aren't motivated.

Is "lack of motivation" associated with "family problems" the correct explanation for the difficulties of many Mexican-American students in school? Quantitative data from this study suggest that it is not. It will be recalled that items on the PSAI indicate that Mexican-Americans were just as likely if not more likely than Anglos to indicate that doing well in school is important to them. They also were just as likely to agree with the proposition that trying to learn what the teachers present in class is worthwhile, and disagree with the statement that what they did in school was a waste of time. Thus, based on these items, it appears that the explanation of many teachers for the problems of Mexican-American students are not correct.

Additional data from this study also suggest that "family problems" are no more prevalent among Mexican-Americans than Anglos. For example, the percentage of Mexican-American and Anglo students who live in complete nuclear families is approximately the same despite differences in academic performance between the two groups. Seventy-six percent of Anglo teenagers in this study

reported living with both of their parents as compared with 78 percent of Mexican-Americans. When one compares the percentage of Mexican-American and Anglo youths who indicated that their parents were either divorced or separated, a smaller percentage of Mexican-Americans than Anglos indicated that such was the case. Eighteen percent of Anglo teens indicated that their parents were divorced or separated as compared to only 13 percent of Mexican-Americans.

Further evidence against the proposition that "family problems" account for the greater difficulties of Mexican-American students in school appears in response to items on the Psychosocial Adaptation Instrument. Of the sixty-four items on the PSAI, Mexican-Americans scored significantly higher than Anglos (i.e., indicated less problematic psychosocial adaptation) on only four. Three of these four items refer to adaptation to the family environment. Mexican-Americans were significantly more likely than Anglos to (1) consider the respect and support of their families to be important (item 23); (2) better understand what their parents expected of them (item 24); and (3) agree with the proposition that their parents usually know what is best for them (item 24). In sum, these data from the PSAI, and the lack of a relationship between incomplete nuclear families and being Mexican-American contradict the opinion of many teachers that Mexican-Americans do worse in school because of a lack of motivation associated with family problems.

The Vicious Circle of Low Morale

The level of motivation to do well in school is uniformly high among all categories of students participating in this study. The greater difficulties faced by Mexican-American students cannot be explained by poor motivation or family problems. Rather, the origin of the difficulties must be sought in the investigation of more concrete circumstances. One circumstance that does seem to affect the adaptation of Mexican-American students at school is the ability to conform to the operational expectations of the teachers. If a student perceives that a teacher has a low opinion of him, or if a teacher is "turned off" to teaching because she thinks that her students are not interested, then the morale of the students may, in turn, decline in a feedback-like reaction. A vicious circle of disinterest may ensue, making victims not only of the students, but the teachers as well. This is illustrated by the comments of two students, James and Rosa.

James, a Black student at Laguna High School, described to me some of the things that he did not like about school. Chief among these were the negative attitudes of some of his teachers.

"School don't excite me," James said. "It don't give me no sparks--you know what I mean?"

"What don't you like about school?" I asked.

"The teachers. Some of them are pretty cool, but most of them aren't."

"What makes a teacher cool?"

"A cool teacher participates. He don't just sit at his desk and bitch. A cool teacher will crack a few jokes, act interested, and really teach."

Rosa is a Mexican-American student from Plainview. She described to me how she has tried to do well and keep interested in school but, no matter how hard she tries, she cannot keep interested in her work. She blamed her failure to maintain interest on the teachers. As Rosa put it,

In the fall, I was doing real well. I decided that this year I was going to work hard and get good grades. Now [April] I just don't care. Lately I have been skipping a lot because school has really gotten boring. One thing that I don't like about school is like when I have to tell a teacher that she should be teaching something. In history, Ms. Lorenz doesn't teach. All she does is tell us to read the book and take notes. We're supposed to be reading, but nobody is reading. The book is out of date. Lots of times we don't do anything in class. Teachers ought to teach us what they know. One teacher told us that they don't pay her enough to teach. If that's the way she feels, why doesn't she quit?

During the course of my fieldwork, I sometimes asked permission of teachers to observe their classes. During one health class at Plainview, I observed that the students were very restless, and were engaging in a little mischief--much to the annoyance of the teacher. It is little wonder that the students were restless, however, as the teacher appeared to be boring the students with mindless busywork. For several days the teacher had been outlining chapters from the health book on the blackboard. The teacher read each line and waited for the students to

write it down before proceeding to the next. The teacher did not discuss the material, nor was she asked to do so.

"What are the symptoms of choking?" was the question read by the teacher to the class.

"The symptoms of choking are:

- (1) Acute choking reflex;
- (2) Discoloration of the skin;
- (3) Absence of respiration"

It is not difficult to understand how students could lose interest, and start to do poorly in their school work despite their intentions to excel. It is also understandable how teachers would come to perceive that their students are disinterested, and how some turned-off students might begin to manifest some "disruptive behavior." In short, a mutually reinforcing cycle of disinterest and cynicism develops. It will be argued below that the basic blame for this unhappy situation lies neither with the students or the teachers, but with the circumstances of their interaction.

Mr. Hopkins of Laguna High School is an example of a teacher who frequently communicates to his students, almost all of whom are either Spanish-speaking or Black, that they are ignorant, or lacking in merit. When I visited his classes he would often make half-joking derogatory remarks to students who either did not complete their assignments, failed exams, or otherwise did not perform as expected. In an informal conversation, Ms. Hopkins

described to me with some pride how he was one of the least popular teachers at Laguna High School. Hopkins certainly was not a racist, nor could he have cared less whether his students spoke Black English, Spanish, or whether they conformed to the norms of middle-class Anglo culture. In fact, Hopkins was something of a nonconformist, himself. Hopkins did insist, however, that his students produce in class--a class that all needed to pass in order to graduate. Hopkins put it this way to me:

These kids don't like me, you see. They can go to their other classes all day long and not do a darned thing. They can get away with murder, and they know that their teachers will pass them. I won't. They know that they have got to produce for me, or they won't pass this class. If they goof off they get kicked out.

Mr. Hopkins' attitudes typify an increasingly common opinion both among teachers and the general public that the schools need to "go back to basics." In his view, if students do not want to learn, no "special programs" designed to motivate or compensate for some "educational handicap" will do any good. His "back to basics" philosophy and his frustration with teaching are further reflected in the following remarks:

You know, Tim, teaching is very boring. You teach the same thing day after day, year after year, and you get pretty tired of it. Teachers like to do something different just to keep themselves interested--and that's how we got stuck with so many of these goofy programs that we have here at this school. I think that teachers dream up some of these "special programs" just to give themselves something different to do. We ought to teach those kids who want to learn, and let the rest of them do their thing somewhere else.

That, in fact was precisely how Mr. Hopkins ran his classes. It was not uncommon for one-third to one-half of the students who enrolled in his classes to either withdraw or be expelled by the end of the term.

From many conversations, and a long period of contact with Mr. Hopkins, it was clear to me that he was very dedicated to his job and spent long hours at the school for very low pay. He put a lot of effort into his work and demonstrated warmth and interest to those youths who responded to his efforts. However, there was little toleration for youths who would not or could not conform to his expectations. Perhaps the students who were the objects of his typically sarcastic criticism were victimized by his impatience or lack of willingness to consider cultural or economic factors as "excuses" for poor performance. But when one considers Hopkins' dedication to his job, and his frustration upon seeing his students fail to perform according to what he considered to be minimal standards, one gets the impression that Hopkins also may have been just as much a victim of circumstances as some of his students.

Other teachers avoided Mr. Hopkins' problem of being an unpopular, hypercritical teacher by demanding and expecting little of their students. Many of these teachers devoted most of their time to coaching, music, or to the sponsorship of school organizations. Some appeared to not be devoting much energy to anything.

Several teachers independently brought up in discussions with me the need for teachers to avoid being too critical of students. Some of these teachers who expressed concern about the bad attitudes of some of their colleagues would, to avoid being too critical, themselves, simply try to "reach" as many students as they could. They would pay little attention to those who failed. Some expressed a belief that unspecified social problems were somehow affecting the students' motivation in school. Instead of specifically addressing these problems, however, these teachers believed in and manifested a teaching philosophy that might be labeled, "individualistic humanism": that is, try to inspire as many individual students as possible while ignoring any "social factors" that may somehow be hindering their success. Every teacher has had a few students who come from "bad families" or who are very poor but who somehow manage to succeed. These are the students, perceived as "diamonds in the rough," upon whom many teachers concentrate their efforts.

This philosophy was articulated to me in the Central High School faculty lunchroom by Mr. Larkin.

Mr. Larkin and I found ourselves in a discussion of philosophy, and he expounded upon the relevance of his philosophy for teaching. He described how in his classes he uses "irrefutable logic" to teach his students that each one of them "is the most important life force in the universe." He argues in his classes that nothing can exist

"to us" unless we perceive it and, for that reason, each of us is the most important and powerful life-force in the universe. Larkin claimed that whenever he makes this argument in his classes, the students are invariably impressed and begin to better appreciate their own worth.

They feel stupid because they have been told over and over by teachers that they don't know anything. I tell them that not knowing anything isn't stupidity; it's ignorance--and there's nothing wrong with ignorance. Stupidity is when you no longer try to learn what you don't know. If we are the most important beings in the universe, and our own best teachers, we must try to learn about ourselves and our environment.

From other conversations with Larkin, however, it was clear that "to learn about ourselves and our environment" did not mean the same thing to him as it would to most anthropologists. Concepts such as society and culture were not nearly so fundamental to his perception of humankind as some distinctly Anglo-American, and even more so, Anglo-Texan concepts such as "will power" and competition.

As is apparent from these brief descriptions, teachers respond in different ways to the challenge of teaching students who are in disconformity with school norms. Some become very intolerant of those who they perceive as having bad attitudes. Others, like Mr. Larkin, try to avoid communicating a dislike or rejection of poor students, and concentrate their efforts on those who they perceive as more responsive. Still others practically give up trying to achieve anything academically and devote

their efforts to developing the athletic potential of their students. Finally, others seem to neither demand nor expect much of their students in any form. Whatever the approach, almost all teachers agree with the proposition that school success depends mostly upon the motivation of the student. Any student, it is believed, can achieve success in terms of the objective academic standards of the school if he or she only tries. Those who fail have no one to blame but themselves.

To place the blame for failure anywhere but upon the student and his or her family would constitute a threat to the legitimacy of the system. For the student to seriously question the fairness of the teachers or the school could easily lead to conflict. Likewise, teachers who question the fairness or legitimacy of the system are likely to face difficulties, themselves. This is illustrated below in an account of the experiences of Mr. Dominguez.

Mr. Dominguez

When I first met Mr. Dominguez, he had been a teacher at Plainview High School for ten years. Dominguez had some definite ideas about why the educational process at Plainview was not working satisfactorily--especially for the poor and Spanish speaking. For many years, Mr. Dominguez had been fighting the school administrators over educational policy. He complained to me about the negative attitudes of many of his fellow teachers toward their students, just as others had done. As Mr. Dominguez noted, the effects

upon the self-image of students who are constantly put down can be very detrimental. "When people tell you over and over again that you are no good, you soon begin to believe it."

In order to improve the educational process at Plainview, Dominguez suggested that students be encouraged to learn more about themselves, and the origins of their present circumstances of poverty. At first glance, what Mr. Dominguez was suggesting sounds very similar to Mr. Larkin's teaching philosophy. Dominguez was far more interested, however, in having the students learn about their cultural heritage, and believed that Chicano studies, history, and social science courses would be good mechanisms by which to achieve this.

By learning more about yourself and your circumstances, you can begin to deal with the problems that you have. It may cause some discontent, but that may be necessary if things are ever going to change around this place. Right now, Spanish is taught here as a foreign language. English should be the foreign language at this school. They're doing a pretty good job with bilingual education at the elementary level, but they are doing nothing with bicultural education. I used to teach the Chicano studies course a couple of years ago, but they took it away from me and eventually discontinued it. They want the students to remain ignorant about their circumstances so they don't challenge the system. The way things are now, kids just get turned off. Instead of channeling their frustrations toward constructive change, their negative self-image shows up in vandalism and disrespect for authority.

The problem here is not so much one of Anglos versus Mexicans. The problems that these kids have mostly boil down to economics. The kids who have the hardest time in school are the ones from the poorest families. Besides not learning, and catching hell from the teachers, these kids are subject to a lot of peer pressure. For example, the girl who wears the same blouse to

school for a week will be shamed by the others. These kids don't do too well with their classes, but a lot of them can get by and have a pretty good time while they are going to school. The real problems for them will start when they go out and try to make a living.

In the early 1970s, there was considerable support for Dominguez's ideas at Plainview. In recent years, however, a more conservative political sentiment has prevailed. The prevailing philosophy among most teachers and administrators at Plainview, and the other three schools as well, may be stated as follows: "The institutions of society should not be challenged or questioned. Anyone can get ahead and better himself if he only works and studies hard." Given both the disproportionate failure rate among certain segments of the population, and the limited number of jobs that pay well in the Corpus Christi area, the veracity of this point of view is questionable.

In an interview with a Mexican-American administrator at Plainview, the local political organization whose views were articulated by Dominguez was described as "radical." As previously noted, the term "radical" has an unusual meaning in the Corpus Christi area. According to this administrator, a radical is one who uses drugs, gets in trouble, and is disrespectful of authority. These are precisely the things that Dominguez was hoping to counteract by attempting to make local institutions such as the schools address the needs of the people.

Dominguez believed that damage was being done to the students by an educational system that was not addressing their needs. Although Dominguez believed that many

students at Plainview behaved irresponsibly and had "behavioral problems," these problems could not be explained by "lack of motivation" or "bad attitudes." If students, indeed had "bad attitudes," the underlying political, social and economic causes needed to be addressed. In Dominguez's view, economic inequality was the most fundamental of the underlying causes, and the schools were helping to perpetuate that inequality through their lack of responsiveness to the educational needs of the poor. In sum, Dominguez considered the "deck to be stacked" against most of the students at Plainview High School. He attempted to rearrange a few cards in the deck by influencing the policies of the schools and other local institutions. Dominguez worked for ten years to accomplish these ends, failed, and ultimately withdrew from education.

Psychosocial Adaptation and Acceptance of the Myth of Meritocracy

The foregoing discussion may be summarized in the following propositions: (1) there are cultural and class biases in the criteria by which Corpus Christi youths are accorded respectability, both formally and informally in school, and (2) these biases make it easier for the student who is relatively affluent and who conforms to the norms of teachers and dominant peer groups to be accorded respect and to achieve success. It is argued that despite these biases in the criteria of respectability, it is a fundamental task of the schools as socializing agents of society to

convince young people of the proposition that if they work hard, they will achieve success. This proposition has been called the American myth of meritocracy (Bowes and Gintis 1976). The teaching of this myth of meritocracy to students by means of their experiences of success and failure in the school setting is an essential component of the educational process. In this manner the student is taught that his or her success depends solely upon performance in terms of objective criteria, and that the system at school, as in society, is both immutable and fair. Those who prove themselves worthy, both in terms of school standards and, more generally, in the "competition of life" will rise to the top.

The myth of meritocracy serves the function of upholding the legitimacy of social institutions by insulating them from accusations of social injustice. It also labels as losers those who are at the bottom of the heap. The potential difficulties which credence in the myth of meritocracy implies for those who fail as well as for their teachers are substantial. Whether or not their teachers explicitly tell them, poor students learn in school that they must somehow be lacking in merit. So too must their parents and friends be lacking in merit if they are without the material symbols of success which are so important in American mass culture (Sennett and Cobb 1972).

Given the relative infrequency of social mobility in American society (Bowles and Gintis 1976:289) and the

fact that in schools such as Laguna, less than one-half of the students who enter will graduate four years later, the validity of the myth of meritocracy must be seriously questioned. Surely the inability of members of certain segments of society to succeed in terms of the values of American society cannot be explained in terms of personal deficiencies. Yet in order for the schools to maintain their own legitimacy, as well as that of other institutions of society, it must not be allowed that the myth be seriously questioned. More than anywhere else, it is in these contradictions of reality with myth, and aspirations with opportunity, that the fundamental cause of the problematic psychosocial adaptation of poor minorities, and the frustrations of their teachers is to be found.

The transformation of the myth of meritocracy into reality in the context of the schools has long been seen as the primary means of eliminating inequality and facilitating social mobility in American society. Horace Mann argued in the nineteenth century that:

Nothing but universal education can counter this tendency to the domination of capital and the servility of labor. If one class possesses all the wealth and the education, while the residue of society is ignorant and poor . . . the latter in fact and in truth will be the subjects of the former [Bowles and Gintis 1976: 26-27].

Former President Lyndon Johnson is quoted as saying (Bowles and Gintis 1976:19), "The answer for all our national problems comes down to a single word: education." Especially since the 1960s, many programs such as bilingual education

and busing have been implemented in an attempt to equalize opportunities in society through education. It is argued here, however, that to rely solely or even primarily on the schools as the medium through which to redress the inequalities in American society is likely to have only limited success. The educational system is but one of many institutions in society, and surely not the only one in which there is inequality of opportunity. Therefore, to attempt to transform the myth of meritocracy into reality in the schools without more seriously addressing problems such as unemployment and poverty is bound to fail. It is also bound to create frustration in teachers such as Mr. Hopkins and Mr. Dominguez. Attempts to equalize opportunities in the schools have probably helped some students to "make it." Many more, however, still have not been able to overcome the barriers to success which have yet to be removed both inside and outside educational institutions.

Class and Ethnic Bias in the Informal

Norms of Peers

Mexican-American youths, especially Spanish speakers, are the most likely to be perceived by teachers as not conforming to official school norms; this, despite a desire by most to do well in school. The same youths are also more likely to be put down by their peers for not wanting or not being able to conform to informal norms. Let us examine this intolerance of disconformity with the

informal norms of dominant peer groups by first looking at the informal social order at the integrated schools-- Central and Sam Houston.

At neither of these two schools is there a significant cleavage between most Anglo and Mexican-American students. At Central High School, both Anglos and Mexican-Americans are well represented in student government, the leadership of clubs and teams, and the Homecoming beauty contest. Interethnic dating is quite common, as are eventual marriages between Anglo and Mexican-American students. Mexican-American students appear to get along well at Central High School so long as they conform to the prevailing social norms which generally are the same as those of middle-class Anglo youths. Similarly, Mexican-American students who conform to the prevailing social norms at predominantly Anglo Sam Houston High School are well accepted. While I was working at Sam Houston, a Mexican-American girl was valadictorian and another was a Homecoming beauty queen. Other Mexican-American students were occasionally elected as class officers and to other leadership positions in the school. The title, "Mr. Sam Houston High School," an honorific title bestowed to the school's most popular male, went to a very dark-skinned youth originally from Micronesia. Thus, matters such as skin color, or whether one has a Spanish surname, appear to be of little importance as determinants of whether one "fits in" at either of these schools. What is more important for successful personal

adaptation is conformity to one of the acceptable or "in" variants of school culture. Important prerequisites to this include the ability to speak English without an accent and the willingness to abandon, or at least hide, cultural traits that are inconsistent with those of the "in" groups.

As illustrated by two incidents involving a research assistant named Pedro Lopez, the pressure to conform can be substantial. Pedro, who majored in anthropology at Yale University and is currently a medical student at Harvard, assisted me in taking blood pressures and in conducting interviews. One day he and I were waiting in a hallway at Sam Houston High School for a teacher to unlock the door to a classroom where we were working. As we were waiting, a small group of Anglo girls started talking with us. They knew who I was because I had been at the school many times before. They therefore asked my companion, "What is your name?"

"Pedro," he replied.

"Pedro?" one of the girls repeated curiously.

"Yeah," Pedro responded, "you know, Pete."

"Ooohhh . . . , Pete," another girl repeated, looking around and giggling with the others. "Pete--that's better."

On another occasion, Pedro and I were measuring blood pressures at Sam Houston. The regular health teacher was not in the room, so the students were somewhat less inhibited than usual. In the course of taking the blood

pressures, Pedro requested of one of the students in Spanish that he "come here."

"Ven para acá," Pedro requested. As the boy approached, the class seemed amazed that a teacher would address a student in Spanish.

"Van para acá! Ven para acá!" the class repeated mockingly. These two incidents suggest that although Mexican-Americans may be accepted by most students if they conform to school norms, there is no pretense of cultural equality at Sam Houston High School.

The social order at Sam Houston High is reflected in the way that students informally congregated during the lunch hour. Spanish-speaking girls tended to gather in groups of six to eight persons when walking in the halls, or sitting in the lunchroom, or, if allowed to do so by teachers, when sitting in class. These girls appeared to have little social contact with other students. Spanish-speaking boys tended to be very quiet and withdrawn, and were often alone or with one or two other Spanish speakers. A few who were "potheads" sometimes fraternized with Anglos who were also "potheads." Marijuana use at Sam Houston was a symbol of discomformity with school norms as it was at the other schools as well. The "potheads," "heads," or as one of the coaches at Sam Houston not so affectionately called them, "jellyheads," had their own subculture. The "pothead" subculture was one of the few in which poor Mexican-Americans and Anglos were likely to informally fraternize.

The isolation of Spanish speakers at Sam Houston is further illustrated by the comments of a student named Ruben Hinojosa. Ruben is sixteen years old, and one of thirteen children. His father is disabled. Ruben's family subsists on public assistance, and the raising of a few pigs and chickens on their small plot of land. Ruben said in the interview that school was "not my onda" (not my thing), but continued to attend in order to please his mother. Ruben enjoyed sports, and used to play baseball for the school team. Last year he quit the team because he felt that the coach didn't like him.

"The coach doesn't play you if he doesn't like you. I guess you could say he was kind of prejudiced. So rather than having to deal with that, I just quit." At the time of the interview, Ruben was playing baseball for an all-Chicano and Black church-sponsored team. Regarding his Anglo classmates, Ruben commented, "Some of them are cool, but the rest just look at you like you were some kind of stranger, or something."

At Central High School, poor Spanish speakers also were likely to be an "out" group, this despite the fact that Mexican-Americans constitute the majority at Central High. Middle-income English-speaking Mexican-Americans mixed easily with Anglos and, together, formed the dominant group at Central. Just as at Sam Houston, the informal groupings of students were illustrative of the social order. During the lunch hour, Spanish speakers occupied one end

of the cafeteria, the largest middle portion of the room was occupied by a mixture of English-speaking Mexican-Americans and Anglos, and the opposite end was mostly filled by Anglos. Spanish speakers were often stereotyped by both teachers, and middle-class Anglo and Mexican-American students as rule breakers, street wise kids, "goof-offs," "potheads," or just "dumbies." One Anglo boy, a "kicker" (sometimes called shitkicker--a person into Western music, boots, wide-brimmed hats, and the Texas cowboy mystique) described certain Spanish-speaking students at Central as "the scuzzy kind of Meskins." Another Anglo student named John was asked in an interview who some of his friends were. John was from a working-class family.

"I only hang out with White kids," replied John, only half jokingly.

He went on to explain that one of his buddies was a Mexican but didn't speak any Spanish and wasn't "the scuzzy kind." John recently moved to Corpus Christi from Laredo where he said he got into a lot of fights with Mexicans. According to John, "Most Mexicans aren't cool."

I asked him what he meant by "cool."

"Well," he replied, "the cool Mexicans are the ones who have a little money. The rest of them just hang around by themselves."

Working-class Anglos at Central and Sam Houston were the most likely to express their opinions about Spanish speakers so frankly. The children of professionals,

both Anglo and Mexican-American, were not as likely to use terms like "the scuzzy kind of Mexican," but instead, would simply be unlikely to associate with such students. The ostracizing effect was the same, however.

Access to money is at least as important to successful participation in many officially sanctioned peer activities as it is in unsanctioned social activities. For youths, especially girls, who are interested in entering prestige rendering school-sponsored activities such as cheerleading, money is an essential prerequisite. For a girl to become a cheerleader in high school requires that her family pay approximately \$350 per year. The money is required to purchase uniforms and to attend a cheerleading camp during the summer. Similar expenses face the families of girls who wish to join the schools' drill teams. Drill teams are composed of approximately forty girls. During the half time of football games, in pep rallies, and in parades, the girls dance or march with pompons to the accompaniment of the band. Their uniforms are similar to those of cheerleaders. Clara Canales, a sixteen-year-old sophomore, wanted very much to join Central High School's "Tigerettes" drill team but Clara's father, who is a construction worker, is employed only intermittently. On his sporadic earnings, he and his wife are raising twelve children. Despite their many financial needs, Clara's father paid \$75 last year so that she could be a cheerleader on the junior high school squad. Clara

is hoping that her father will be able to pay an additional \$350 this year so that she can join the "Tigerettes."

Some schools in the Corpus Christi area also sponsor contests whereby girls vie for the title of class "sweetheart." At Plainview High, the families of girls put on dances for which they charge money to attend. The dances are held in rented halls, and the girls hire the best bands that they can, usually "conjuntos" (playing music in Spanish). Proceeds from the dances are donated to the girl's class. The girl who has the most successful dance (i.e., has the most people attend her dance) becomes the class sweetheart. A significant amount of money is also required for formal clothes and corsages, etc., for girls who hope to be honored by their peers in popularity contests such as for Homecoming queen, and the various "duchesses" selected by the school teams, and the band. Besides the problems posed for poor girls by these out-of-pocket expenses, it is unlikely that one would be selected as a Homecoming queen, duchess, or sweetheart anyway unless she had enough money to buy the clothes, and be able to afford to participate in activities that make one "cool."

The financial costs for school-sponsored activities in which boys participate are generally not as great as for girls. Uniforms and most other expenses associated with participation in athletics are paid for by the schools. At schools such as Laguna and Plainview, however, many students cannot afford to participate in school-sponsored

activities such as athletics because of the need to work. Very often students work not just to earn their own spending money, but to help support their families. The athletic director of Laguna told me that the economic pressures imposed on many of his athletes are great. Many youths try to participate in the school's athletic program while holding jobs at night. Last year, one of the key players on the Laguna basketball team had to be hospitalized for several days due to nervous exhaustion. Besides playing basketball and going to school, he was working eight hours per night trying to help with family expenses.

Much money is also required to put on "quinceaneras" and "sweet sixteens." These elaborate social events are held by the families of fifteen- and sixteen-year-old Mexican-American girls at Plainview, and to a lesser extent, at the other three schools. Quinceaneras and sweet sixteens may be considered as rites of passage from childhood to womanhood. Marissa, a fifteen-year-old student at Plainview described for me her upcoming quinceanera.

Well, the reception is going to be at the K. of C. Hall, and the Conjunto Madrigal will provide the music. But before the reception starts, my parents, padrinos, and fourteen maids will go to St. Mary's Church for a mass. The maids and I will be formally dressed like it was a wedding. The fourteen maids plus me make fifteen, for how old I am. During the mass, the priest will bless the ring rosary, necklace, Bible, and bracelet that they are going to give me. After everything is over at the church, we will go to the K. of C. Hall for the reception and dance. That's where we will meet our escorts.

The number of "padrinos" (godparents) involved in a quinceanera varies, depending on the costs incurred. The padrinos

help to pay many of the expenses. Sweet sixteens are similar to quinceaneras, but tend to be slightly less elaborate.

Marissa mentioned that some of her friends are now asking their parents to give them an automobile instead of a quinceanera. Some of their parents have agreed. While the gift of an automobile does not create bonds of fictive kinship, and reinforce family ties as would a quinceanera, the gift of an automobile is in some ways comparable to a quinceanera. Just like the quinceanera, the automobile symbolizes the transition from a period of protection by the family at home to the freedoms of adulthood.

Most families, of course, cannot afford to give their daughters automobiles, and many cannot afford to spend the large sums of money necessary for a quinceanera or a sweet sixteen, either. Laura Benavides is a student at Plainview. Her father is unemployed. Laura told me that even if her family could afford to give her a quinceanera, she wouldn't want it. When I asked why, she expressed her concern that she might not be able to get fourteen "damas" (maids) to come. For some of your maids to not show up at your quinceanera would be profoundly humiliating.

The importance of wealth and the cultural traits that accompany it for social acceptance by peers is apparent from this discussion. It is not just in relation to the institutional norms of the schools that Mexican-American youths, especially Spanish speakers, tend to exhibit

greater difficulties, but in other social environments as well. It will be recalled from chapter 4 that on the basis of scores for psychosocial factor 6, the adaptation of Mexican-Americans to the peer environment was significantly more problematic than it was for Anglos. In their responses to the psychosocial Adaptation Instrument, Mexican-Americans were more likely to agree with statements such as: When I am around other people my age I feel that they have got it together more than I do (item 12); I feel alone and isolated even among my friends (item 48); There are few if any people who I can really consider to be my friends (item 15); I feel unsure of how to act when I am at parties, dances, outings or dates with someone of the opposite sex (item 19); I feel that I don't fit in with the other people in this extracurricular activity (item 52); In general, I feel that I am not well liked by others (item 51). It may be concluded from this discussion, and from the responses of Mexican-American students to these and other PSAI items that not only are they at a disadvantage in attempting to adapt in terms of the institutional norms of the school, but also in terms of other social environments as well.

Despite these systematic differences between ethnic groups in responses to PSAI items, and in differential access to valued social statuses, the obvious point must be emphasized that not all or even most Mexican-American youths have especially great difficulty in adapting to

their surroundings. Not all are poor, and of course many do very well in school. Nonetheless, the relationship of being Mexican-American to poor school performance and problematic psychosocial adaptation do not occur by chance. They can only be understood in terms of the history and contemporary social, economic, and political structure of the area.

As indicated by examining factor 7, Mexican-American youths are at least as interested in doing well in school as Anglo youths. If a Mexican-American youth dedicates himself or herself to doing well in school, and accepts the validity of the myth of meritocracy, that youth may be under great pressure to succeed. As we will see, however, there are certain psychological and social means that are employed to lessen the burden of these pressures. For example, despite being more likely than Anglos to indicate that they feel that they are not "making it" in school (item 7), that they don't know how to act in order to do well in school (item 9), and that they have trouble figuring out what the teachers want them to do (item 43), Mexican-Americans were just as likely as Anglos to agree with the statement: From my point of view, I am doing as well in my school work as I need to do (item 42 and factor 8). It appears that there is a tendency on the part of some Mexican-American youths to situationally define their norms. While not abandoning idealized goals defined in terms of the official norms of school and society,

some youths appear to simultaneously adhere to behavioral norms that are more consistent with their real opportunities. At this point let us examine some of the psychological and social means of coping adopted by Mexican-Americans and others to deal with their everyday problems and challenges.

Psychological Coping Styles

Mexican-Americans were no more likely than Anglos to indicate that they cope with problems in an emotional way (factor 4)--i.e., by becoming frustrated or expressing anger (items 61C and 61D). Mexican-Americans were significantly more likely than Anglos, however, to indicate that they cope when things go wrong by the denial of problems (item 61A). Also, an examination of factor 10 indicates that Mexican-Americans are more likely than Anglos to use nonemotional styles of coping with problems than were Anglos. Given the many problems faced by Mexican-American youths, the tendency to respond to problems in a nonemotional way probably serves a protective function.

Social Adaptations

Socially, the manner in which Corpus Christi youths adapt to their circumstances is related to the unique configuration of resources, opportunities and challenges which they face. The children of professionals, most of whom are Anglos, tend to be the most future-oriented. This is understandable in that they have the greatest chance of

success as defined in terms of the official criteria of school and society. For them, school tends to be easy. In contrast, youths from working-class families often are more present-oriented. They tend to find their school work to be more difficult, and do not do as well in school as the children of professionals. Many present-oriented Anglo youths from working-class families fit the "kicker" modality. Generally, they needn't worry much about their futures because they often have friends or relatives who can get them high-paying blue collar jobs. School performance has little to do with the likelihood of getting such a job. In contrast, Mexican-American youths from working-class families cannot be so confident of their futures. A minority of such youths become engrossed in the desire to achieve. Unlike the future-oriented Anglo children of professionals (frats), however, school work is not likely to be so easy, and there are no assurances that such extraordinary effort will pay off. Such youths are often under considerable pressure, particularly if they are not performing well in school.

A more common adaptation for Mexican-American youths is to become more engrossed in the present. In so doing, the painful awareness of the gap between aspirations and expectations of achievement in terms of school and society becomes muted in the flow of everyday events. Such youths may be looked down upon by their teachers and more successful peers, and may be adversely affected to some degree in

their psychosocial adaptation because of this. But to continually focus attention upon one's disconformity with official norms and the uncertainties of the future would be even more difficult and threatening. Orienting one's interests toward social activities of the present, which are either irrelevant to or conflicting with official norms, offers a behavioral context in which one may be recognized by some as a worthy person.

Let us now examine information from interviews that serves to illustrate the relationship between the opportunity structures and social adaptations of Corpus Christi adolescents. First we will examine the case of Larry Burke, a future-oriented "frat." Next, we will meet Bubba Jones, an Anglo kicker who is little concerned about conformity to official norms in the present, nor worried about the future. Then we will examine the social adaptations of two future-oriented Mexican-American youths from working-class families. Theirs is perhaps the most tenuous of situations. Roel Santos is a high-achieving youth with an almost single-minded dedication to achievement. Val Martinez, on the other hand, is failing to meet the expectations which he and his family have set. Following Roel, we will meet David Alvarado. It might be said that David is a "Duespayer." He does not do too well in his classes, but is trying to learn what he can in the time that he has left in school. Lupe Serna is an average student from a poor family. He does not think very often about achievement

or the future, but instead has immersed himself in social and recreational activities of the present. Finally, we will meet Joe Quiroz. Joe is struggling to stay out of trouble, while trying to define his identity and obtain the respect of others in the "straight" world.

Larry Burke

Frats tend to be the most successful of all students in terms of academics and popularity among classmates. Most frats are the children of professionals, and are likely to enter college and become professionals, themselves. They are the most likely to be leaders in their schools, and to participate in many school-sponsored activities. They also tend to have the social amenities consistent with the high status of their families in the community. Most frats are Anglo, but there are some Mexican-Americans, especially at Central High School. Frats constitute large minorities of the student bodies at Central and Sam Houston. Because of the low socioeconomic status of most residents in the Plainview and Laguna districts, there are few frats at these schools. In the words of one frat at Sam Houston High, Larry Burke, "The people in my group are the all-around studs."

Larry is a sixteen-year-old sophomore at Sam Houston High School, and is the oldest of three children. His father manages the trucking company that his grandfather owns. Larry's mother is a housewife. For the

past two summers, Larry has worked with his father's firm as a truck mechanic. He enjoys working on engines, but mechanics is only one of his many interests. Most of his time is devoted to his various activities at school. Larry finds his classes to be very easy, and gets mostly As on his report cards. Despite the fact he is still growing, and "only six feet tall," he was the leading rebounder on the varsity basketball team, and one of the better players in the entire league. Also, he has already proved himself to be a key player on the Sam Houston football team.

When he is not participating in some school activity, he likes to build things. He recently built a cabinet for the family's stereo. The Burke family owns a "lake house," and Larry enjoys going there on weekends. He especially enjoys riding at the lake on his "jet ski," which is something like a surfboard with a control panel and a jet engine attached. It's ridden standing up. If one loses one's balance, one falls off--but supposedly with no ill effects. Larry said that he and his cousin were asked to do a commercial for the people who sell them, as both are good at jumping off the jet ski and doing flips.

Larry told me that he liked school a lot; the classes are not too difficult, and he enjoys being around the other kids. He used to go to another school, but likes Sam Houston better. He finds the people to be friendlier at Sam Houston, and there is better school spirit. He also noted that unlike his old school, the best athletes at Sam

Houston also tend to be the best students. For example, Bobby Jo Adams, last year's valedictorian, was also the star of the girl's basketball team. When he graduates, Larry would like to go to college and major in business. He then would like to return to Corpus Christi to help run the family business.

Larry was described to me by one of his coaches as a "super kid."

He does everything you ask him, and he does it well. His family has mucho money, too. Larry's father wanted to give him a new Grand Prix for his sixteenth birthday, but he didn't want it. He was afraid the other kids would make fun of him--so now he drives a '68 Dodge to school.

Kickers

In the local parlance, the term kicker is more or less synonymous with "red neck," or "cowboy." The kickers, even more so than the frats, are a predominantly Anglo group. Most of the kickers whom I met were the children of working-class parents, involved in industries such as oil, trucking, ranching, and farming. Presently, however, to be a kicker is "in," and people from many backgrounds are adopting some of the trappings of being a kicker--i.e., cowboy hats, boots, pick-up trucks, "Texas music." The heaviest concentration of kicker teenagers in Corpus Christi is at Sam Houston High School. There, kickers constitute the largest group in the school. It may be said of the kickers that they both work hard and play hard.

Unlike the frat, the teenage kicker's life is not as likely to be centered around school. Kickers are the

least likely of any teenagers to aspire to becoming professionals or to go to college. Therefore, the school environment tends to be less important for them than for others. The kicker proves his competence by what he does, and not by diplomas, "paper shuffling," or even so much by what he owns. Kickers are very suspicious of institutions and bureaucrats of all sorts, and have a very low tolerance for "bullshit." The kicker orientation is glorified in country and western music and is the side of Texas that is most visible in the national media. The kicker orientation is aptly expressed by the Texas folk song, "Cotton Eyed Joe." This song is a favorite at kicker dances, and is guaranteed to raise the spirits of the dancers. It is also played frequently at professional basketball and baseball games in cities such as San Antonio and Dallas. The refrain of the song is:

Looks like what?
 BULLSHIT!
 Smells like what"
 BULLSHIT!
 Tastes like what?
 BULLSHIT!
 Feels like what?
 BULLSHIT!

The kicker adaptation is illustrated by the case of Bubba Jones.

Bubba Jones

Bubba was in one of the health classes in which I worked, but I first got to know him in the back of the Central High School during lunch hours. Bubba was nearly

always stationed by one of the rear doors of the school at noon. His uniform was a cowboy hat adorned with a turkey feather, boots, and blue jeans. He was usually "dipping snuff" (i.e., chewing tobacco), and along with two or three other similarly dressed male friends, would just stand around and look "bad." Whenever I saw him, he would always tell me about what happened when he was cruising the streets the previous night, or of his exploits at the kicker bars. He stood out of the crowd at Central High School, but Bubba would have been much less conspicuous at Sam Houston. Bubba said to me once, "When you hear people talkin' about drinkin', they're talkin' about doin' my thing." In the colorful, but sometimes cruel terminology of Sam Houston High, Bubba would have been known as only one among many persons in the subgroup of kickers called "scumbags." The label is derived from the practice of "dipping snuff."

Bubba is a seventeen-year-old sophomore. His father, who is the third husband of his mother, is a mailman. Mrs. Jones' first husband was killed in a construction accident. She divorced her second husband after only one year of marriage. Bubba does not know why, but his two older half brothers have been "out to get" Mrs. Jones' second husband for many years. Bubba is the youngest of four children and lives with his parents. He says that he gets along "all right" with his parents, but leaves the house every chance he gets. As soon as he gets a better-paying job, he will move out.

Every weekend, and on many weeknights, he works the concession stand at the Municipal Colliseum. On most nights, the building is rented for wrestling matches, rock concerts, or dances. During these functions, he earns \$2.00/hour. He spends most of his money cruising around town, at bars, and in night clubs. He has two vehicles: a 1969 Bonneville and a 360 cc Honda motorcycle. Both are equipped with C.B.s. Many of the people with whom he drinks and goes out he has met over the C.B. radio. If for some reason he has to stay at home, he spends most of his time operating the C.B. base station. The different channels of the Citizen's Band in Corpus Christi are dominated by different groups. His crowd, including persons with handles such as Sunshine Cindy, Butterball, and Wild Irishman, are found on channels 18 and 21. Persons using these channels are mostly young kickers from Central and Flato High Schools. Channel 13, he says, is the Mexican channel.

Bubba is a year behind in school because when he was in sixth grade, he hit a teacher and was suspended. "I was a mean little kid," Bubba told me. "If a teacher told me to do one thing, I'd do the other just to make her mad. My older brother is the one who made me mean." After repeating sixth grade, Bubba went to Conrad Junior High, one of the rougher schools in town. "If you went to Conrad, you know how to fight." The last time that Bubba got in a fight was two years ago. "Some guy named Ralph wanted to fight me. He didn't like me hanging around his girlfriend. I think he was about 6'7", and 320 pounds.

I came in second." After having broken his wrist fighting Ralph, Bubba has tried very hard to avoid fights--although there are plenty of opportunities in the places where he hangs out. I asked Bubba if many of the fights were between Mexicans and Anglos. "No," he replied, "most of the fights are between hippies and red necks."

Bubba has an Uncle Frank who lives in Houston. He owns a welding company and a ranch near Victoria. Whenever he can, Bubba likes to go to the ranch. "I've been breakin' horses since I was seven," says Bubba. Recently, he has begun to compete in rodeos, riding bulls. He hopes to go to Wichita Falls soon to compete in an event sponsored by the Texas Rodeo Association.

Bubba does not expect to graduate from Central, but says that he finds school to be "all right." "It keeps me out of trouble." Some of the classes he finds interesting, although others aren't. When I asked him what were some of the things that he didn't like about school, he began to vehemently complain about how they only let students "dip" (dip snuff, or chew tobacco) in the back of the school, and not in the front or anywhere else. Recently, Bubba was suspended from school for a week for drinking in the parking lot. The suspension didn't bother him, however, for as he says, "It just gave me some more free time to do the things I like." One reason why Bubba may be so nonchalant about school is because he knows that no matter what he does there, his future is secure. "As soon as I turn

eighteen, I'm gonna be makin' \$8.00 an hour as a welder for Uncle George."

The Future Oriented--Students Dedicated
to Upward Mobility

Although kicker adolescents like Bubba generally come from working-class families, they have three important assets which many other working-class youths lack: (1) Their parents typically hold skilled, or at least relatively high-paying blue collar jobs. This facilitates the ownership of status-rendering goods such as cars, and increases the likelihood that they might become apprenticed in one of the skilled trades at an early age. (2) Even if a kicker youth does not learn a skilled trade from his parents, that youth is likely to have an uncle, a cousin, or some other "connection" to help in getting a good job, as was the case with Bubba. (3) The kicker way of life is glorified in popular culture. The rugged, hard-working and hard-playing nonconformist is the essence of the Texas cowboy, revered in legend, music, and movie. To be somewhat aloof, and disinterested in school and other "bullshit paper pushing" activities is often interpreted as a sign of independence and self-reliance.

Nonkicker working-class youths in Corpus Christi, most of whom are non-Anglo, are faced with far greater challenges in adapting to their surroundings, both in material and subjective terms. At least four strategies are open to these youths, but each is fraught with potential

difficulties for the present, the future, or both: (1) Non-kicker working-class youths can fight the odds, and dedicate themselves to preparation for upward social mobility. As we will see, this sometimes implies almost a single-minded pursuit of achievement which, under certain circumstances, tends to isolate one from one's peers. Those who choose this route and fail to achieve their objectives may face great frustration. (2) Not worry about one's academic or social status in school, except so as to assure one's graduation. Such students hope that a high school diploma may make available to them the opportunities to achieve their more modest objectives. (3) Not worry much about the future or one's academic performance, but concentrate on social relations with one's peers in activities that do not conflict with the norms of school or society. (4) Become a "bad dude." Some youths choose to demonstrate their social competence by flaunting their defiance of the norms of school and society.

At this point, let us examine the cases of two youths who have chosen the first alternative: to dedicate themselves to upward mobility. Roel Santos is working very hard to achieve in terms of official school norms, and is having considerable success. Val Martinez, however, is not.

Roel Santos

Roel is an exceptionally serious-looking fifteen-year-old freshman at Laguna High School. In health class, he was very attentive. He would always sit by himself in

the back of the room and rarely talked with anyone. Few of the other students paid much attention to him. It didn't appear that the others disliked him, but rather that he simply did his thing, and they did theirs. Roel is one of the top five students in his class. Says Roel:

There are lots of kids who just want to pass; they're happy with C's and D's. I'm not like that. I want at least a B in every subject. It's expected of me--by my parents, by my friends, and by me. I've always gone after good grades. I remember once in junior high school, I didn't even make the honor roll. I was really disappointed. Two or three others and I are always at the top of our class, but usually, Janey Douglas or Felix Gomez ends up number one. Just once, I want to feel what it's like to be number one. Just once in high school I want to be first in something.

Roel consciously competes for grades with other students. It is not an unfriendly competition, however, as the students with whom he competes are his friends. I asked Roel if some of the other kids did not get angry with him for showing them up in class. He replied,

Well, people do put you down sometimes for doing well. They say, "You must think you're bad, or think you're better than the rest of us." Most of the time, though, they like you to do well because you take the pressure off them. If nobody else in the class knows the answer to a question, and you do, kids don't mind if you answer it.

In junior high, Roel was on the football team. He also was on the student council then, as he is now. One of Roel's fondest memories of junior high was when he came in first in an intramural foot race during seventh grade. "I'm really not a good athlete," says Roel, "but I get attention because I try hard. I don't know, maybe next year I'll go out for football again."

Roel is the second of four children. His father is a construction worker. His mother is a housewife. His older brother is a junior at Laguna, and also a dedicated student. Roel noted that his brother gave him a very important piece of advice when he was in junior high:

He told me that when other kids try to get me to goof off, I shouldn't pay any attention to them. He said that pretty soon they would be coming to me and asking me to help them. He was right.

Roel spends most of his time at home.

I feel comfortable with kids here at school, but I don't get along with people outside of school too well. I'm not too sociable.

Roel spends most of his time reading books. Fiction is his favorite--especially science fiction. During the last summer vacation, he stayed at home on most days to read; at night he watched television.

Roel gets along well with his parents and siblings, but says that the family doesn't do many things together. "Everyone pretty much goes their separate way." The happiest time that Roel can remember was when he was in seventh grade. "We [the family] did a lot more things then. We went to the park, and out to Padre Island. Now, dad doesn't have time to do much. He's always working." The worst time for Roel was after his father had an operation.

He was out of work for several months, and for a long time was lying on his back in pain. He was really down. We were a little short on money then, too, but we got by.

Roel does not yet know what he would like to do for a living, but whatever it is, he wants to make money. He definitely wants to go to college.

Val Martinez II

Val is the younger of two children in his family. His older brother, Pete, is a lieutenant in the army. Val's mother is a housewife, and his father works as a supervisor at the Suntime refinery. It is apparent that Val has a lot of respect for his parents, especially his father. According to Val, his father has never missed a day of work in his life. The family originally had lived in San Antonio, but moved to Corpus Christi seven years ago. His father had been working in a laundry in San Antonio. The owner of a laundry in Corpus Christi heard about his father somehow, and offered him a job. At that time, Val Senior had been making \$90/week, a salary with which he was fairly well satisfied. The man from Corpus Christi offered him \$190/week, however, and of course Val Senior accepted the offer and moved to Corpus Christi. After working at the laundry in Corpus for a while, Val says that his father decided to apply for a position as supervisor at Suntime. He didn't think that he really had much of a chance for such a high-paying job, but decided that he had nothing to lose. He got the job, and is currently very happy with his very responsible position at the plant. Val Senior has only a 10th grade education.

Val is a member of the Central High School medical club, and eventually would like to work in that field. He noted that for a long time he wanted to become a veterinarian, but on a recent tour of the hospital at the Naval Air

Station, he was very impressed by the aerospace physiologist (which he called, "psychologist"). The major problem which Val faces, however, is his grades. Lately he has been getting "Cs" and "Ds" on his report cards, and he is beginning to doubt that he will ever get the kind of job that he wants. But, as Val put it, "Why worry about that now?"

About five weeks ago, Val says that he began to skip school--something that he had never done before. According to Val, "A girl told me that she would teach me how to skip." Since that time, he has skipped classes quite often. The girl who "taught" him how to skip has since dropped out. "I really don't understand why I'm doing it. Lately, I've just been getting tired of being around school."

I was very impressed in talking with Val by his articulateness. He has the presence and speaking ability of a good orator, yet he is only a sixteen-year-old sophomore and is doing poorly in school. His health teacher, Mrs. Barker, says that despite his outstanding speaking ability, Val reads at only an eighth-grade level. The gap between his academic performance and his aspirations appears to be widening. Val's parents expect a lot from him, and Val expects a lot from himself. Despite his intention "not to worry about that now," sooner or later Val must reconcile his performance with his goals.

The case of David Alvarado is an example of a youth who is an example of a youth who is presently "paying his

dues" in school. He does not do too well academically, but is nonetheless determined to learn what he can in the time that he has left in school.

David Alvarado

David is an eighteen-year-old senior at Central High School, and the oldest of four children in his family. David's father and mother separated three years ago. He now lives with his mother and two brothers. His seventeen-year-old sister married last year, and now lives with her husband in Houston. David still sees his father often as he continues to live in Corpus Christi. He works as a welder for a company building off-shore oil rigs. His mother also works. According to David, "She takes care of some old lady in her home." David says that his mother wants to finish high school, and then start nursing school--a decision that she made after separating from her husband.

I got to know David fairly well during the time that I worked at Central High. He impressed me as being a reserved person--the strong and silent type. He says that he is moderately interested in school, but enjoys it more for the comradery than for the classes. He is especially turned off by studying "dumb things" like math and English. David recalls that he always has disliked reading, ever since he started school. "That stuff doesn't have much to do with what I want to do when I get out of school, you know?"

Sometimes I don't try too hard in school, but for things that I'm really interested in, I'll go all

out. I used to really try hard in football, and now I will be trying very hard to get myself a job where I can use my act.

His "act" is art.

David started to take his artistic talents seriously a couple of years ago after a friend of his died in a freak football accident. David was very moved by his friend's death and painted a picture of him. He presented the picture to the boy's parents. The boy's parents then gave the picture to Kleberg High School (which Jimmy previously attended). While the picture was on display, a professional sculptor saw it. She talked extensively with David about entering art as a career, and she has been trying to get him some recognition in the field ever since. Now, David has been doing a lot of painting and is very much taken by the style of Salvador Dali.

Even though David is a senior, he will not be graduating in May. He just transferred from Kleberg to Central High School this year. At Kleberg High, he received "Ds" in several courses. At Kleberg, "Ds" are considered to be flunking grades, while a "D" is a passing grade at Central. Even though Central considers "Ds" to be passing, the school refused to accept the credits from courses at Kleberg for which he received "Ds." David doesn't know how many credits he is lacking but only that he will not be graduating in May. After May, he no longer wants to attend school.

I asked David why he comes to school now if he knows that he is not going to graduate. He replied that

besides the companionship of his friends here, "I could stand to learn some more." David is planning to take the high school equivalency test (G.E.D.) this summer, and the more schooling he gets, the easier he figures it will be for him.

Last fall, David's mother reportedly tried to "push" him into joining the navy. David says that he talked to the recruiter, and even turned in his enlistment papers. Fortunately, from David's point of view, the navy gives prospective recruits a day or two to reconsider after enlisting. The day after David enlisted, he went back to the recruiter to inform him that he had changed his mind. As David put it, "I don't like to be pushed into nothin'."

David has a girlfriend about whom he is quite serious. Her name is Joan Iverson, a student at Flato High School. They met while working together at the Staples Street Whataburger (restaurant). Joan is the first girl who David has ever dated for more than three weeks. David says that he was "crazy about" the last girlfriend that he had, but she dropped him. The experience left David depressed for a long time. According to David, "Joan isn't like that. She's everything that anyone would ever want in a girl--she's smart, outgoing, witty . . . you know? She likes to smile and laugh a lot." David indicated that he would like to marry her as soon as he gets a good job. He and Joan have been going together for six months and, says David, "Things are really going good."

I asked David what sorts of things he likes to do in his spare time. David replied that he didn't really have much spare time since he has been working at Whataburger. What free time he does have he spends drawing, watching T.V., or with his girlfriend. I then asked David what sorts of things he and his girlfriend liked to do. David paused a moment and seemed to be taken aback. I then assured David that I did not mean to be too personal. After laughing a bit, David grinningly told me that Joan was the first girl with whom he had ever gone parking.

"We were riding around in her car, and she was driving. I asked where we were going."

"Parking," she said.

"My jaw dropped open, and I said . . . 'O.K. . . . sounds good!'"

This summer, David is planning on going to Houston where he hopes to get a job as an illustrator. His father's brother is a businessman there, and David hopes that he will have some connections to get him a job. Eventually, he would like to go into animation--drawing figures that move to rock music. David indicated that he had been "planning many things in his head," and that they are just itching to get out as soon as he can begin.

In sum, David appeared to me to be a well-adjusted person with his sights set on the future. He has not done all that well in school, and is itching to "begin his life." He is not at all certain about the success that he will have, but nonetheless is ready to pursue his goals.

Lupe Serna

Lupe is a person who doesn't pay much attention to official school norms, but when he thinks about it, would like to do well in school. However, Lupe's attention is usually directed to more immediate interests. Lupe is a person who is turned off to school, and its "official" values. According to Lupe, what he enjoys most is hard rock music and parties. The thing that he likes most about school is "walking around the halls and talking to kids." If it were not for the classes and the tests, school would be really great!

Lupe is a seventeen-year-old sophomore whose interests appear to revolve around his friends. Until he started working he loved to play street football. Lupe recalls that his team had two secrets to its success in competition with teams from other neighborhoods. First, their quarterback, Jorge, was an excellent playmaker. Their team had regular plays which they executed well. Second, they had a "Fat Albert" type person who played fullback. He was as tough as he was fat. Fat Albert, who wore a crew cut, was unstoppable because he would butt all prospective tacklers with his head. Lupe has especially fond memories of playing football when he was in elementary school. "We'd take names like Mercury Morris and Johnny Unites. We used to play on the concrete to show that we were tough." Besides football, Lupe played a lot of "anything goes basketball."

Currently, he has a job as a janitor in a warehouse where his father works. Lupe would like to get a different job, however, because, "You can't get away with nothin' when your father is there." He is trying to get a job as a "bag boy" at Kroger because it is a union job and pays better.

I asked Lupe if he had a girlfriend. He replied that he did not, and didn't want one either. "Having a girlfriend is a hassle," he said, because it inevitably leads to gossiping and jealousy. "Someone always ends up asking, 'Who saw who with who?'" After discussing the disadvantages of having a girlfriend, however, Lupe finally confided that he would rather have a girlfriend than not, "so that you don't have to walk around by yourself all the time."

Lupe indicated that he enjoyed being at home with his family, but that things used to be more fun when his older brother was around. "Now," he says, "there is no one to argue with around the house. We used to argue a lot in fun. It used to get pretty noisy." On the weekends, the family often gets together for barbeques. Lupe and his brothers have a chance to get together on these occasions to put each other down and have a good time.

Lupe seems to be very impressed with his younger brother, Freddie. "Freddie is a real con man. He knows where all the parties are--what is happening everywhere." A couple of years ago, Freddie and Lupe met a couple of girls from another junior high school.

Freddie told the girls that he was a quarterback, and I was a star halfback. Freddie is still in junior high, but those two girls ended up coming here to Central High School. I had to think up a bunch of lies to tell those girls about why I'm not playing football anymore! I like to sit around and B.S. with the girls, but Freddie is definitely the king.

The Nonconformers

Some youths who have been denied respectability in terms of "official culture" try to get by in the face of an all-too-apparent gap between aspirations and performance. Such was the case with Val Martinez. Others just "pay their dues" like David, or direct their interests into peer activities irrelevant to official school norms as did Lupe. Some, however, have come to actively flaunt their disconformity with school norms and the values of "official culture." Mr. Dominguez of Plainview was one person who wanted to channel discontent and opposition to "official culture" on the part of poor Mexican-American youths into a new political and cultural modality: Chicanismo.

Curiously, Chicanismo, as it was promoted by Mr. Dominguez, serves a similar adaptive function for working-class Mexican-Americans as does the kicker orientation for working-class Anglos. Both kickers and Chicanos make the statement: "We have no need to conform to the norms of middle-class Anglo society. Our way, the way of us working folk, is legitimate. We deserve to be respected for being the way we are, and not for trying to become something that we are not." Thus, both legitimize a working-class

orientation--one with Anglo cultural components, and the other with Mexican.

The major difference between the Chicano and kicker orientations is that as a cultural expression, the kicker way is glorified as the folk culture of Texas. Chicanismo, on the other hand, has received much less acceptance as a legitimate cultural form. As a political movement, the kicker orientation is currently in vogue in the form of conservative populism. One likely reason for its widespread acceptance is that the kicker's individualism and suspicion of regulation and control are generally consistent with business interests (i.e., antiregulation, free enterprise). In contrast, Chicanismo as a political phenomenon has supported the proposition that Mexican-American workers and the poor should represent themselves, and make local institutions more responsive to their needs. Mr. Dominguez had hoped that if students could take pride in themselves as Chicanos, discontent would be channeled into constructive social purposes rather than be manifested in senseless delinquency. The case of Joe Quiroz illustrates how youths can sometimes become involved in delinquency.

Joe Quiroz

Chicanismo has never been particularly important to Joe Quiroz and his family. Both Joe and his family have a long history of being nonconformists; they have seen their share of trouble. For now, however, Joe is determined to "play it straight." Joe is an eighteen-year-old junior at

Laguna High School. When I worked in his health class he would invariably be sitting by himself, and never talked to anyone. His face was almost always totally expressionless. One day when I was teaching, Joe raised his hand to respond to a question which I had posed to the class. After the class period was over, Mr. Hopkins, his usual teacher, came up to me and said, "I want to congratulate you for getting Joe to talk. This is the first time that he has ever said anything in my class." After working in Joe's class for two weeks, I was surprised when he was so talkative during our interview.

Joe has three brothers and five sisters. Oscar, twenty-seven, is the oldest. Oscar currently owns a nightclub that features live music by many of the more popular Mexican-American groups. He also is a boxer. According to Joe, he is the light heavyweight champion of Texas. Oscar also has spent time in prison for drug dealing. I asked Joe how his brother could have accumulated enough money to buy his nightclub at such an early age. "He won it all boxing," Joe replied. Armando, aged twenty-six, is a carpenter and lives in Waco. Martin, twenty-four, is currently in prison for shooting someone in a bar. As Joe put it, "Some guy tried to grab his cigarettes from him. Martin got mad and stabbed him. He later went back and finished him off with a gun." Nellie, twenty, is married to a truck driver. She is the mother of three and lives in Kingsville. Joe's other sisters are all younger than him and are

attending school. His mother is a housewife. Joe's father died ten years ago in a traffic accident. When I finished asking Joe about his family, I made the passing comment, "Pretty big family you've got there." Joe countered with a wry smile, "Pretty rough bunch, eh?"

Joe is one year behind in school because last year he frequently skipped classes. According to Joe, his buddies convinced him to stop attending. "We would just go cruise or go to the mall." This year, Joe decided that he needs a high school diploma. After graduating, he wants to go to the junior college's technical school to study auto mechanics. He would like to stay in Corpus Christi because of big cities like Houston and Dallas he says, "There's too much crime."

When I was in junior high, I wasn't the same as I am now. In junior high, I made a fire in my classroom desk, and then acted like I was asleep. They didn't do anything to me that time. Next, I threw a bottle rocket inside a classroom. After I did that they wanted to expel me and give me a fine of \$200, but they couldn't prove I did it.

Joe's mischief making did not begin in junior high school, however. "When I was in second grade, I locked the teacher inside a room and started a fire." Joe seemed to thoroughly enjoy telling me about his past exploits, but made it clear that he intended to keep out of trouble until he graduates. "When I go to class, I get 'Bs' and 'Cs,'" he says.

At home, Joe does little more than eat, sleep, and listen to the radio. At night he likes to go out cruising with his friends. He has no girlfriend. Joe sometimes

likes to go to a friend's house to lift weights. He has pressed 220 pounds on the barbells at school, but hasn't been able to lift so much weight lately. His friend's set of barbells is not that heavy. Joe no longer has access to the barbells at school as they are now restricted for the exclusive use of the football players. Joe used to play football, but quit two years ago because, he says, he didn't like to go to practice. His brother, Oscar, has taught him a bit about boxing. Even though Joe is now old enough to legally drink, he does not like to go to the clubs and bars. Says Joe, "There's too much trouble to find there, man."

Joe has no desire to marry. "It's too much trouble," he says. "Everything is going up. It's too expensive, and it will get harder in the future. Jobs will be harder to find. If I don't get married, I won't have to worry about any of that."

Chapter Summary

In the first half of this chapter, the types of problems that Mexican-American youths are more likely to face were discussed. It is clear that Mexican-American youths are more likely to face greater difficulties than Anglo teens in attempting to conform to official school norms. In addition, Mexican-Americans, especially Spanish speakers, may also be less likely to obtain the respect and support of teachers, and be less likely to be included among higher status peer groups. In the second half of this chapter, psychological coping styles and the

relationship of types of social adaptations to differing opportunity structures were reviewed. Despite the difficulties faced by Mexican-American youths and the fact that their responses to so many of the PSAI items were indicative of more problematic psychosocial adaptation, it is possible that some psychological and social adaptations help to reduce the potential for adverse psychological and biological (i.e., high blood pressure) consequences. Coping by denial, and immersion into one's immediate swirl of activities in the face of larger problems may help prevent the activation of the General Adaptation Syndrome or the Defense-Alarm Response, which are believed to ultimately lead to elevations in blood pressure.

Mr. Dominguez of Plainview High School noted that youths having difficulties can often get by while they are in school without having to face their problems. According to Dominguez, their problems are more likely to become apparent to them once they become adults and have to try to earn a living. However, those youths who become engrossed in the desire to succeed in terms of the criteria of "official culture," yet who fail, may be more vulnerable to more immediate adverse consequences related to the chronic activation of the General Adaptation Syndrome. Youths such as Joe Quiroz, who have not yet found a cultural idiom in which to define their identities, may also be more vulnerable to adverse psychological and biological consequences.

CHAPTER VII

INFLUENCES UPON BLOOD PRESSURE

Problematic Psychosocial Adaptation and Blood Pressure

So far it has been established that the first two of the three hypotheses of this study have been substantially confirmed. Mexican-American and Black teenagers were found to have higher blood pressures than Anglo youths, and Mexican-Americans (but not Blacks) were found to have more problematic psychosocial adaptation than Anglos, as determined on the basis of differences in the responses of these groups to PSAI items and factors. In an effort to elucidate the reasons for the more problematic psychosocial adaptation of Mexican-American youths, the sociocultural context in which that adaptation occurs was reviewed in the last three chapters. Chapter 6 was concluded with a discussion of types of psychological and social adaptations corresponding to different opportunity structures. It was argued that some of these adaptations, such as coping by denial and immersing oneself in social activities unrelated to the norms of "official culture" may protect some youths from immediate psychological and somatic consequences such as blood pressure elevations.

Let us now examine the third hypothesis of this study; that is, that indicators of problematic psychosocial adaptation will be related to high blood pressure. As was discussed in chapter 2, measures of psychosocial stress have been associated with high blood pressure in studies of adults, but not among children or adolescents. In this study, seventeen of sixty-four items on the Psychosocial Adaptation Instrument were found to be related in a statistically significant manner with high blood pressure. Of these seventeen items, fourteen were correlated in a manner that could be considered consistent with hypothesis 3.

In all but a few of these items presented below, this will be indicated by a negative Pearson correlation coefficient (r). The statistic, Pearson's r , is a measure of the strength of the relationship between two variables of an interval or ratio level of measurement. According to Nie, Hull, Jenkins et al. (1975:280), the strength of relationship (as indicated by " r ") indicates both the goodness of fit of a linear regression line to the data, and when r is squared, the proportion of variance in one variable explained by the other.

Item 9 I _____ understand what to do and how to act in order to do well in school.

I	I	I	I	I	
(5)	(4)	(3)	(2)	(1)	$r = -.0821$
always	usually	sometimes	rarely	never	$n = 758$
					$p_2 < .05$
					$r^2 = .005$

Item 18 How I get along with members of the opposite sex is very important to me. This statement describes my feelings:

I	I	I	I	I	
(5)	(4)	(3)	(2)	(1)	
very	fairly	somewhat	of	not	$r = -.0678$
important	important	important	little	important	$n = 758$
			importance		$p_2 < .05$
					$r^2 = .005$

Item 26* I currently belong to at least one club or team (from church, school, or elsewhere), or I have a job.

1. yes	$r = .0711$
	$n = 754$
2. no	$p < .05$
	$r = .005$

Item 32 I feel like I don't "fit in" with the other people on this club or team, or where I work. This statement describes my feelings:

I	I	I	I	I	
(1)	(2)	(3)	(4)	(5)	
very	fairly	don't	not	not	$r = -.0821$
well	well	know	very	at	$n = 501$
			well	all	$p < .05$
					$r = .007$

Item 33 I enjoy what I do when I am on the job, or with my team or club. This statement describes my feelings:

I	I	I	I	I	
(5)	(4)	(3)	(2)	(1)	
very	fairly	don't	not	not	$r = -.0090$
well	well	know	very	at	$n = 504$
			well	all	$p < .05$
					$r = .0100$

Item 34 I feel that what I do on my job, or with my club or team, I do well.

I	I	I	I	I	
(5)	(4)	(3)	(2)	(1)	
very	fairly	don't	not	not	$r = -.0725$
well	well	know	very	at	$n = 503$
			well	all	$p_2 < .05$
					$r^2 = .005$

*Persons who indicated that they did not participate in any extra-curricular activity had higher blood pressures than those who participate.

Item 35 They never clearly explained what I am supposed to do in this job, club, or team. This statement describes my feelings:

I	I	I	I	I	
(1)	(2)	(3)	(4)	(5)	
very	fairly	don't	not	not	$r = -.0920$
well	well	know	very	at	$n = 502$
			well	all	$p_2 < .05$
					$r^2 = .008$

Item 37 The way that other people expect me to act is _____ the same as how I like to act.

I	I	I	I	I	
(5)	(4)	(3)	(2)	(1)	
always	usually	sometimes	rarely	never	$r = -.0806$
					$n = 752$
					$p_2 < .05$
					$r^2 = .004$

Item 39 I feel that I _____ understand why people act the way they do in different situations.

I	I	I	I	I	
(5)	(4)	(3)	(2)	(1)	
always	usually	sometimes	rarely	never	$r = -.0806$
					$n = 755$
					$p_2 < .05$
					$r^2 = .006$

Item 44 I am interested in many of the activities at this school, and feel that I am a part of what is going on here. This statement describes my feelings:

I	I	I	I	I	
(5)	(4)	(3)	(2)	(1)	
very	fairly	don't	not	not	$r = -.0717$
well	well	know	very	at	$n = 753$
			well	all	$p_2 < .05$
					$r^2 = .005$

Item 50 I _____ feel like I have "got it together" when I am around someone of the opposite sex.

I	I	I	I	I	
(5)	(4)	(3)	(2)	(1)	
always	usually	sometimes	rarely	never	$r = -.0587$
					$n = 755$
					$p_2 < .05$
					$r^2 = .003$

Item 52 I feel that I am well liked by members of the opposite sex. This statement describes my feelings:

I	I	I	I	I	
(5)	(4)	(3)	(2)	(1)	
very	fairly	don't	not	not	$r = -0.0600$
well	well	know	very	at	$n = 754$
			well	all	$p_2 < .05$
					$r^2 = .004$

Item 61D, regarding the frequency of coping when things go wrong by the projection of anger, was also correlated with systolic pressure. As was discussed in the literature review, researchers have found that persons who have repressed or pent up emotions--especially anger--tend to have higher blood pressures than others. Corpus Christi adolescents who were least likely to cope when things go wrong by projecting anger toward others tend to have higher systolic blood pressure.

Item 61-D When something that you do does not turn out well, how often do you do each of the following:

(D) I become angry, and try to take it out on someone else.

I	I	I	I	I	
(5)	(4)	(3)	(2)	(1)	
always	usually	sometimes	rarely	never	$r = -.0675$
					$n = 749$
					$p_2 < .05$
					$r^2 = .005$

Finally, Item 59 was also correlated with systolic pressure.

Item 59 I have trouble finding enough hours in the day to do everything that I want to do. This statement describes my feelings:

I	I	I	I	I	
(1)	(2)	(3)	(4)	(5)	
very	fairly	don't	not	not	$r = .0928$
well	well	know	very	at	$n = 753$
			well	all	$p < .01$
					$r = .009$

As was discussed in chapter 4, this item was designed to test whether a response suggestive of the Type A personality would be associated with high blood pressure. Surprisingly, this item, one of the two best predictors of blood pressure on the PSAI, was correlated in a way opposite to

that which was predicted. Just as agreement with this statement may be indicative of the Type A Personality, which has been related to risk of heart attack (but not high blood pressure), disagreement with the statement could be interpreted as indicative of boredom, which also has been associated with ill health (Dubos 1965; Antonovsky 1979). Of the fourteen PSAI items correlated with blood pressure in a manner consistent with hypothesis 3, the responses of Mexican-Americans significantly differed from those of Anglos on the following: items 9, 18, 26, 32, 35, 50, 53, and 61-D. The responses of Mexican-Americans to all nine of these items indicated more problematic psychosocial adaptation.

Only three items on the PSAI were correlated with blood pressure in a way clearly inconsistent with the hypothesized relationship between problematic psychosocial adaptation and high systolic pressure. All three of these items refer to adaptation to the social environment of the family.

Item 21 I agree with my parents about most things, and recognize that they usually know what is best for me. This statement describes my feelings:

I	I	I	I	I	
(5)	(4)	(3)	(2)	(1)	
very	fairly	don't	not	not	$r = .0657$
well	well	know	very	at	$n = 758$
			well	all	$p_2 < .05$
					$r^2 = .004$

Item 24 _____ understand what my parents want me to do.

I	I	I	I	I	
(5)	(4)	(3)	(2)	(1)	
always	usually	sometimes	rarely	never	$r = .0587$
					$n = 758$
					$p_2 < .05$
					$r^2 = .003$

Item 55 One day my parents tell me to do one thing, and the next day they tell me to do something different. Lots of times I just don't know what they want me to do. This statement describes my feelings:

I	I	I	I	I	
(1)	(2)	(3)	(4)	(5)	$r = .0768$
very	fairly	don't	not	not	$n = 752$
well	well	know	very	at	$p_2 < .05$
			well	all	$r^2 = .006$

The responses of Mexican-Americans and Anglos significantly differed on all three of these items. The responses of Mexican-Americans were significantly higher than those of Anglos for items 21 and 24. The opposite was the case for item 55.

In that fourteen PSAI items are correlated with systolic pressure in a manner consistent with the first hypothesis of this study while only three items were correlated in a clearly inconsistent manner, it would appear that hypothesis 3 is supported by the data. Youths with more problematic psychosocial adaptation have higher systolic pressures than others. Despite the numerous statistically significant relationships between PSAI items and systolic pressure, however, it must be noted that the correlations are very weak. The best predictor of systolic pressure, item 9, accounts for only 1 percent of the total variation in blood pressure. Nonetheless, there are more statistically significant correlations in the direction predicted than would be expected by chance. At significance levels of $p < .05$, only three correlations would be expected due to chance. Problematic psychosocial adaptation, then, appears

to exert a significant but relatively minor influence upon the blood pressures of teenagers in Corpus Christi.

Pulse, Defense-Alarm Response, and
High Blood Pressure

It will be recalled that, according to defense-alarm theorists, the early stages of the development of hypertension should be characterized by a high cardiac output and a fast pulse rate. Given the weakness of correlations between PSAI items and systolic pressure for the population as a whole, it would seem likely that problematic psychosocial adaptation may exert an influence upon the blood pressures of only a small proportion of the population. Those youths with the fastest pulse rates should be the most likely to have relatively high blood pressures due to problematic psychosocial adaptation. As will be seen below, this was found to be the case.

When the responses to PSAI items of youths with the highest blood pressures were compared to the responses of youths with low blood pressures--without taking pulse into consideration--few significant differences were found. More specifically, PSAI responses of youths whose blood pressures were above the 85th percentile were compared to those of a control group whose blood pressures were between the 17th and 32nd percentiles.* Group 1 had systolic pressures

*A control group with blood pressures ranging over 15 percentiles in the lower end of the distribution was desired. The selection of a control group with blood pressures ranging from the 17th to the 32nd percentile rather than some other range of relatively low blood pressures was arbitrary. No other control groups were used in any tests comparing psychosocial responses with the high blood pressure group.

of at least 121 mm Hg. The pressures of group 2 ranged from 99 to 104 mm Hg. A t-test for differences in the responses of the two groups to the PSAI revealed only four items for which there were statistically significant differences. Two were consistent with hypothesis 3 (item 52 and item 59), and two were not (item 21 and item 24). The number of PSAI items for which the responses of youths with high blood pressure differed from those of a control group with lower blood pressures is barely more than would be expected by chance.

When pulse is taken into account, however, the relationship of psychosocial adaptation to blood pressure becomes more apparent. The PSAI responses of the same control group were compared to those of youths whose blood pressures were not only above the 85th percentile, but also whose pulse rates were within the highest quartile. That is, only youths whose blood pressures were at least 121 mm Hg and whose pulse rates were at least 85 per minute were selected for comparison with the control group. Statistically significant differences in response to six PSAI items were found. For five of these items, the responses of the high blood pressure - high pulse group were indicative of more problematic psychosocial adaptation. Only item 21 was correlated in a manner opposite to that which was predicted.

Item 1 In general, I _____ am interested and can identify with what people are doing around me.

I (5)	I (4)	I (3)	I (2)	I (1)
always	usually	sometimes	rarely	never

HBP GROUP

$\bar{X}$ = 3.21
S.D. = 0.84
N = 38

LBP GROUP

$\bar{X}$ = 3.53
S.D. = 0.87
N = 105

(t = 1.98; p<.05)

Item 9 I _____ understand what to do and how to act in order to do well in school.

I (5)	I (4)	I (3)	I (2)	I (1)
always	usually	sometimes	rarely	never

HBP GROUP

$\bar{X}$ = 3.58
S.D. = 0.76
N = 38

LBP GROUP

$\bar{X}$ = 3.90
S.D. = 0.70
N = 105

(t = 2.40; p<.05)

Item 21 I agree with my parents about most things, and recognize that they usually know what is best for me. This statement describes my feelings:

I (5)	I (4)	I (3)	I (2)	I (1)
very well	fairly well	don't know	not very well	not at all

HBP GROUP

$\bar{X}$ = 4.21
S.D. = 0.93
N = 38

LBP GROUP

$\bar{X}$ = 3.76
S.D. = 1.15
N = 105

(t = -2.16; p<.05)

Item 32 I feel like I don't "fit in" with the other people on this club or team, or where I work. This statement describes my feelings:

I	I	I	I	I
(5)	(4)	(3)	(2)	(1)
very well	fairly well	don't know	not very well	not at all

HBP GROUP

$\bar{X}$ = 3.56
S.D. = 1.19
N = 27

LBP GROUP

$\bar{X}$ = 4.09
S.D. = 1.13
N = 77

(t = 2.10; p < .05)

Item 34 I feel that what I do on my job, or with my club or team, I do well. This statement describes my feelings:

I	I	I	I	I
(5)	(4)	(3)	(2)	(1)
very well	fairly well	don't know	not very well	not at all

HBP GROUP

$\bar{X}$ = 3.81
S.D. = 0.74
N = 27

LBP GROUP

$\bar{X}$ = 4.17
S.D. = 0.74
N = 77

(t = 2.16; p < .05)

Item 59 I have trouble finding enough hours in the day to do everything that I would like to do. This statement describes my feelings:

I	I	I	I	I
(5)	(4)	(3)	(2)	(1)
very well	fairly well	don't know	not very well	not at all

HBP GROUP

$\bar{X}$ = 2.92
S.D. = 1.28
N = 38

LBP GROUP

$\bar{X}$ = 2.20
S.D. = 1.24
N = 103

(t = -3.02; p < .01)

If a fast pulse is a characteristic of persons with high blood pressure that is due to the repeated activation of the defense-alarm response, one would expect that PSAI responses indicative of problematic psychosocial adaptation would also be correlated with a rapid pulse rate. This was found to be the case. Nine PSAI items were related in a statistically significant manner to pulse rate. Responses to eight of these items indicate that problematic psychosocial adaptation is associated with a fast pulse. Only PSAI item 53 was correlated in a contrary manner.

Item 5	Item 10	Item 29	Item 52	Item 53
$r = -.0987$	$r = -.0696$	$r = -.0817$	$r = -.0716$	$r = .0653$
$n = 673$	$n = 674$	$n = 450$	$n = 672$	$n = 672$
$p_2 = .005$	$p_2 = .035$	$p_2 = .042$	$p_2 = .032$	$p_2 = .045$
$r^2 = .010$	$r^2 = .005$	$r^2 = .007$	$r^2 = .005$	$r^2 = .004$

Item 54	Item 55	Item 56	Item 61c
$r = -.0643$	$r = -.0826$	$r = -.0669$	$r = .0717$
$n = 671$	$n = 668$	$n = 668$	$n = 667$
$p_2 = .048$	$p_2 = .017$	$p_2 = .042$	$p_2 = .032$
$r^2 = .004$	$r^2 = .007$	$r^2 = .004$	$r^2 = .005$

Psychosocial Factors and Blood Pressure

It is difficult to infer more from the weak correlations of the fourteen disparate PSAI items to blood pressure than that the number of relationships in the predicted direction is greater than would be predicted by chance. In an effort to clarify which aspects of psychosocial adaptation are related to blood pressure, the ten psychosocial factors were examined. If any of the factors are found to be related to blood pressure, the relative magnitude of influence of each of the aspects of psychosocial adaptation represented by the factors may be determined.

Of the ten psychosocial factors, three were found to be correlated with blood pressure in a statistically significant manner:

Factor 2	Factor 4	Factor 9
$r = .10$	$r = .11$	$r = .09$
$n = 533$	$n = 533$	$n = 533$
$p_2 < .01$	$p_2 < .01$	$p_2 < .05$
$r^2 = .01$	$r^2 = .01$	$r^2 = .08$

Factor 2 is related to blood pressure in a manner opposite to that which is predicted by hypothesis 3. Three of the five PSAI items that comprise factor 2, Adaptation in the Family Environment, are the only items that are correlated to blood pressure in the direction opposite to that which is predicted by hypothesis 3. Youths who indicated that they are well adapted to the social environment of the family have higher blood pressures than others. A probable explanation for this unexpected finding will be discussed shortly.

In contrast to factor 2, factor 9 is correlated with blood pressure in a manner consistent with hypothesis 3. Factor 9 measures the general degree of involvement versus alienation from one's surroundings. Youths who are least involved and most alienated from their surroundings, in general, tend to have higher blood pressures. Factor 4 measures the propensity to react to things going wrong in an emotional way; i.e., with inward-directed anger and frustration, and outward-directed hostility. Those youths who were least likely to use this emotional coping style when things go wrong had higher blood pressures.

Mexican-American youths had significantly lower scores for factor 9, indicating that they are less involved and more alienated than Anglo youths. Mexican-Americans had higher scores for factor 2, indicating that they have somewhat less problematic psychosocial adaptation to the family environment than Anglo youths. Mexican-Americans and Anglos did not significantly differ in their scores for factor 4, regarding the likelihood of reacting to problems through frustration and anger.

It may be concluded from this discussion of the relationship of quantitative indicators of psychosocial adaptation to blood pressure that there are both more PSAI items and factors correlated with blood pressure in a manner consistent with hypothesis 3 than would be expected by chance. One of the ten PSAI factors and fourteen of sixty-four PSAI items were correlated with blood pressure in the predicted direction. On the other hand, one factor and three PSAI items were correlated with blood pressure in the direction opposite to that predicted by hypothesis 3. This factor, factor 2, measured adaptation to the social environment of the family, as did the three PSAI items. Measures of psychosocial adaptation to the family environment are the only ones in which the adaptation of Mexican-Americans was significantly less problematic than that of Anglos. Because of this, these unexpected correlations may be artifacts of the tendency for Mexican-Americans to have higher blood pressures than Anglos despite their less-troubled adaptation

at home. Finally, the meaning of the correlation of factor 4 with blood pressure is not clear. Persons who were disinclined to react to problems emotionally had higher blood pressures. Whatever the meaning of this, one's coping style does appear to exert a minor influence over blood pressure.

Even though more PSAI items and composite factors are related to blood pressure in the manner predicted than would be expected by chance, no item or factor can account for more than 1 percent of the variation in blood pressure. Many youths with relatively high blood pressures apparently do not have especially problematic psychosocial adaptation. Also, there are a number of youths with problematic psychosocial adaptation but not high blood pressure. It is therefore likely that there must be other influences upon the blood pressures of Corpus Christi's teenagers that are more powerful. There are many possible reasons why quantitative measures of psychosocial adaptation do not explain more variation in blood pressure. Besides the possible influence of matters not directly related to psychosocial adaptation such as diet and heredity, it is entirely possible that some of the psychological and social modes of coping which were described in chapter 6 may mitigate the impact on blood pressure of difficult social circumstances. For this reason, it is useful to also examine qualitative information from personal interviews in an effort to identify psychological and social characteristics associated with blood pressure that may not have been detected by quantitative techniques.

Interviews of Youths with Relatively
High Blood Pressures

In my observations and personal interviews with teenagers, I attempted to identify patterns of relationships among social factors, modes of personal adaptation and blood pressure. For most youths who I interviewed, I could not identify any such relationship. It was my impression, however, that youths with relatively high blood pressure were more likely to have certain types of problems than youths with normal (average) blood pressures. Youths with high blood pressures seemed somewhat more likely to have one or more of the following characteristics: a lack of material or social resources necessary to perform subjectively important roles; downward social mobility; inability to express emotions; and uncertainty as to cultural or subcultural identity. Some or all of these characteristics are illustrated by the cases presented below.

Uncertain Cultural or Subcultural Identity. Individuals who are caught between conflicting behavioral orientations constitute one type of adolescent that appears to be somewhat more susceptible to high blood pressure. Joe Quiroz and Roy Villarreal are two such teenagers. Both appear to be struggling to conform to the official norms of the school and to resist the lure of the streets. Both Joe and Roy seem to find the street life more exciting than "straight life," but realize that to involve oneself in what Roy calls "The Fantasyland" requires that one pay a high price. For Roy,

the biggest cost would be the loss of his girlfriend. For Joe, who has been involved in his share of mischief, the concern is that he would end up like his two older brothers--serving time in the penitentiary. Neither Joe nor Roy seem yet to have clearly defined how to relate to others.

The interview with Joe Quiroz was already presented in the last chapter. It was suggested then that his apparent inability to find a legitimate cultural or subcultural idiom in which to define his identity could be a cause of problems for him. It will also be recalled that Joe seldom participated in class, and usually had a remarkably expressionless demeanor. His tendency to internalize the many problems that he faced and to suppress his emotions would seem to predispose him to the chronic activation of the General Activation Syndrome, and ultimately to the relatively high blood pressure that he has.

Roy Villarreal

Like Joe Quiroz, Roy Villarreal has seen his share of trouble. More so than with Joe, it is not at all clear whether Roy's mischief-making days are over. Roy seems to be torn between the lure of the streets, and the love of his girlfriend. His relationship to his girlfriend is jeopardized every time he gets in trouble. At age seventeen, Roy is a sophomore at Central High School. He has been in trouble inside and outside of school for as long as he can remember. A year ago, however, he started going with a girl named Marta. Since then, Marta has been the main force for

moderation in his life. Three months ago, Roy was put in jail for selling a small quantity of marijuana to a policeman. Marta made it clear to him that unless he straightened up, he could forget about her. Roy is now trying very hard to stay out of trouble.

Roy is the youngest of four children. Says Roy about his older brothers and sisters, "Everyone in the family has a record." Roy doesn't get along with his father, but greatly respects his mother. He sometimes lives at home with his parents, but more often stays in the house of his brother. Roy also spends much time with Marta and her family. "Marta's folks have been great to me. Her uncle even offered me a job to keep me out of trouble."

Around school, it appeared to me that Roy was always trying to attract attention to himself, often by bothering other students. His health teacher told me that he has tried to give Roy as much responsibility as possible to get him motivated, but confided, "It doesn't seem to be working too good." One of Roy's responsibilities in health class was to read the roll call, checking for absences. On two or three occasions when he was reading the class list, he would deliberately mispronounce the names of other students. His classmates would just look at each other in disgust. One finally stood up and shouted angrily, "Pronounce it right!" Besides his girlfriend, it appeared that Roy had few other friends at Central High.

Last year he attended the Corpus Christi school district's alternative education center after having been

expelled from two junior high schools for fighting. This year he should be attending Barrimore High School on the West Side, but managed to enroll in Central so that he could be with his girlfriend. Roy currently is on the junior varsity football team. He proudly told me that when he attended Johnson Junior High, he broke the school record for the 880-yard run. He went on to explain about his speed, "I once outran a cop on Agnes Street. The cop knew me though, and later picked me up in his police car." I asked Roy what he had been doing.

"Running drugs," he replied. Officer Rudd, the policeman who caught him, knows him all too well. Says Roy, "Every time he sees me I get stopped. He's really on my case. I hate that S.O.B. I know he's got a son who attends Flato High. I'd like to meet him some time."

Roy described to me how he sometimes hangs out with members of the Bandidos, a motorcycle gang.

I guess I do all sorts of things that I'm not supposed to do. The funnest thing is to get drunk and go cruising up and down Ayres looking for action. You name it; it's there. Everybody's in their own fantasy world over there. They're looking to score with some chick, buy drugs, get drunk, drag race, whatever. It may be a fantasy world, but it's a hell of a lot more fun than going to school or watching television.

It appeared to me that Roy is trying very hard to stay away from the "fantasy world." He knows that sooner or later, it would catch up with him as it did with his brother who is now in the penitentiary. School may be boring and he may be disliked by his classmates, but as he says, "I'm trying to do what is right for Marta."

Clara Canales

Like Joe Quiroz, Clara Canales is one of the youths mentioned in chapter 5 who also has high blood pressure. Clara lives in a neighborhood pertaining to a West Side high school. Like several other students from the West Side who I interviewed, Clara decided to transfer to Central High School. Clara's father is a construction worker earning a modest and intermittent income. She is one of twelve children. Clara's mother is a housewife who generally stays home to take care of her children.

According to Clara's PSAI: she has few friends; she can't act naturally, or be herself around others her age; she has trouble figuring out what the teachers want her to do; she feels nervous and unsure around others her age; she often feels alone and isolated, even among friends; she doesn't feel "together" around boys; and she feels that her parents set contradictory and conflicting rules for her. Clara is hoping to join Central High School's "Tigerettes" drill team for the coming school year. Even if she "makes" the team, however, there is some question whether her father will be able to pay the \$350 to buy her uniform and to send her to summer training camp. Currently, Clara is a member of the Future Homemakers Club, and the girl's track team.

On the basis of her responses to the PSAI and from her manner during the interview Clara seemed to be rather insecure and lacking friends. It appears that she seeks to join school organizations as a way of gaining popularity.

Given the financial circumstances of her family, the "Tigerettes" is one organization which she may not have the resources to join.

Laura Benavides

Laura Benavides is the individual who was quoted in chapter 4 as saying that she would not like her parents to give her a quinceanera because she was afraid that she could not get enough maids to show up at the ceremony. Her responses to the PSAI suggest that she has very problematic psychosocial adaptation to all social environments. Her blood pressure is also within the upper fifteen percentiles of youths in Corpus Christi.

Manual Diaz

Manual Diaz is another youth with high blood pressure who is clearly lacking in social support. He is both isolated from his peers, and gets little support from his family. Manual is a sixteen-year-old sophomore at Plainview High School. On the afternoon that I interviewed Manual, I entered his health class to ask his teacher if I could speak with him. Manual's teacher agreed. As we left the room, however, his classmates were calling Manual unflattering names and making fun of him.

Here are some of Manual's responses to the PSAI: he gets upset easily when things do not turn out well for him; he has trouble relating to peers; he has few friends; he doesn't get along with his family; he feels that he doesn't

"fit in" at school or in his activities in the Future Teacher's Club; he doesn't feel that he is a part of what is going on at school; he feels alone and isolated even among friends; he feels that things seldom turn out right for him; he responds to things going wrong by becoming frustrated, but never by projecting anger.

I began my conversation with Manual by asking him about things that he likes about school. He indicated that he likes math, typing, biology, and pep rallies. Manual is a slightly better-than-average student. When I asked him about things that he does not like about school he replied--and this caused him pain to mention--that he disliked being called a "pig," being derided for being fat, and certain other things. I did not press on to discover what those other things were because the question seemed to be causing him such emotional pain.

Manual told me that he had only two friends--Lupe Chavana and Ricky Lopez. I asked Manual what sorts of things he liked to do with his friends. He replied that he usually helps them with their schoolwork. I asked if Lupe and Ricky ever help him with anything. He said that they did not. After school Manual likes to help teachers check papers, as he is a member of the Future Teachers Association (FTA). Manual doesn't know whether he would like to be a teacher but says that he enjoys being in the FTA because he gets to know the teachers better.

Manual has lived all his life in the Plainview school district. He is one of six children, and the third oldest

in his family. His oldest sister, age nineteen, lives at home. The sister, named Adelia, doesn't work or go to school. Maria Luisa, the second oldest, is seventeen. Last year, she ran away from home and now lives in a nearby town with a girl friend. I asked Manual during the interview about his memories of his early childhood. One of the things that he liked to do when he was little was to watch his father work on cars. He also mentioned remembering that he liked to watch his mother sew, and watch TV.

I then asked Manual if he could remember things that he disliked during his early childhood. It immediately became obvious upon asking this question that I had touched upon something very painful to him. Six years ago, his father tried to kill his mother. It was very difficult for him to talk about this. Shortly after that incident his parents were divorced. At this point in the conversation it became very difficult for him to continue. The interview ended prematurely at this point.

From what Manual had told me and from what I had observed, if anyone has high blood pressure due to difficult social circumstances it should be he. He is often derided by his peers for being fat, and for his effeminate speech and mannerisms. He is not a person who outwardly displays much anger. Rather, he tends to silently take abuse from others.

Oscar Rodriguez

Individuals who have a strong desire for material success and high social status, yet who perceive that they

are not making adequate progress toward that end, constitute another type of youth that seems especially susceptible to high blood pressure due to problematic psychosocial adaptation. While most youths who I interviewed indicated that they value wealth and material success, most are primarily oriented toward activities of the present. Youths who have tasted prosperity but who perceive themselves as downwardly mobile tend to be especially concerned about their uncertain prospects for the future. Oscar Rodriguez is one such youth who also has high blood pressure. Oscar is a seventeen-year-old junior at Sam Houston High School. He lives with his mother in a modern ranch-style house in the country. He is an only child. His father was a supervisor on an off-shore oil rig, and earned a good salary. Last year he died of cancer. The family had mortgage insurance, so Oscar and his mother are able to remain in their new house despite their present meager income.

Oscar is proud that he attends Sam Houston High, and not some "low class" school like Plainview or Laguna. He considers those schools to be "rough." When he graduates he wants to go to college to study electrical engineering. When I asked, "Why electrical engineering?" he made it plain that he was interested in a job in which he could make a lot of money. Oscar is concerned, however, that he may not be able to meet his objectives. His grades are a little better than average, so he would probably be admitted to college; but they are probably not good enough to earn him an academic

scholarship. Until last year, he was on the football and track teams, and was also in the marching band. He had hoped that his participation either in athletics or band might facilitate his getting a scholarship. Unfortunately, an event occurred one year ago that precluded that possibility. At that time, Oscar had a part-time job working at a filling station. After fixing a flat tire, he was putting it back on the wheel when the tire blew up. Oscar sustained a serious injury--multiple fractures of his right foot. The injury still gives him pain such that he can no longer march with the band let alone play sports. It is entirely possible that the injury might not only prevent him from getting a college scholarship, but the continuing pain might also prevent him from getting any job that would require him to remain on his feet for a long period of time.

None of Oscar's relatives are particularly wealthy or influential such that they could help him with loans, or by "pulling strings" to get him a good job. Nonetheless, Oscar remains dedicated to his goal. He tries hard in school, and then works long hours after school in a convenience store. He and his mother attend church regularly. Oscar keeps the faith that things will turn out the way he wants.

Leo Montalvo

Leo Montalvo faces a problem similar to that faced by Oscar: a fall from affluence upon the death of his father. Leo is a sixteen-year-old sophomore at Central High School. His father was a very successful air conditioning contractor

who, before he died, was earning \$75,000 per year. When he died several years ago he had recently bought a house in one of the wealthiest neighborhoods in the city. Like Oscar, Leo now lives at home with his mother.

Leo does not want to follow in his father's footsteps and enter the building trades. Says he,

That kind of work is just too hard. I want to go to college and get into business administration. Going to college is the only way you're going to make it. You've got to tell yourself, "I'm going to be rich; I'm going to make it in this or that." When I get into business, I'm going to invest my money, and then reinvest it over and over. I want to have money so I can look at it and see how much I've made.

"Do you want to make a million?" I asked Leo.

"Sure," he replied. "Doesn't everybody? Don't you?"

From the time he was seven years old until his father died, he worked with him in the air conditioning business. Leo said that his father paid him \$6.00 per week. I jokingly asked Leo why he didn't go on strike for higher wages. He replied, "I didn't mind making so little money then because I knew when he died I would end up with everything, anyway. So, I had no complaints." Five years after his father's death, however, Leo does, in fact, complain about not having money. He says that for lack of money, he never goes out riding and "can't afford to have a girl friend." "Too expensive," he says. I asked Leo if he had considered getting a part-time job. I don't want to think about that right now," he replied. "I work in our yard cutting the grass, pulling weeds, and washing windows. I don't know I just want to think about sleeping. All my life is about is to

eat and to sleep." On a typical day, Leo gets up, goes to school, comes home, eats, does his pushups and situps, watches television and then goes to bed. I asked if he were in any clubs or extracurricular activities. He replied that he was not, and that such things were a waste of time. From my observations of him on the school grounds, and from this interview, it appears that Leo has few, if any, friends.

Leo used to get good grades in school but lately they have been going down. Since he began attending Central High he has flunked two classes--something that he had never done before. When I asked about specific classes, he indicated that he likes health class because it is easy, but not English, math, or history. "It's all a waste of time; there's no need for them."

Leo does not live in the Central High School district. Rather, he lives in a predominantly Anglo area around Flato High School. I asked Leo why he did not attend Flato High. "I came to Central because I was afraid they would start busing people from Flato over to Portside High. There's no way I'd go over there."

I asked why he would object so much to going to Portside.

"It's too cheap."

"Cheap? What do you mean, cheap?" I asked.

"You know, there are too many cheap Mexicans. You know what I mean."

Upon further inquiry, I found out that he considered "cheap Mexicans" to be ones with long hair who get into fights and who smoke marijuana.

"If they don't start busing next year, I'll probably transfer to Flato; but if they bus, I'll come back here. I'll beat the system somehow."

In sum, Leo left me with the impression that he was a very depressed young man. Both during the interview, and in class he appeared ill at ease. He is isolated from his peers, and apparently not on his way to meeting his objective of "making a million dollars."

Later in this chapter we will examine by means of a multiple regression analysis the importance of psychosocial adaptation in comparison to other influences upon blood pressure. Let us first, however, individually examine the influence upon blood pressure of several factors related to the biological dimension of adaptation.

Body Mass Index (BMI)

Most epidemiologic studies of the blood pressures of youths have found that measures of the heaviness of body build or of obesity are the best predictor of blood pressure. In this study, the body mass index (pounds/inches²) is the variable with the strongest statistical relationship to blood pressure. This is indicated by the following statistics regarding the study population as a whole:

$$\begin{aligned}
 r &= .4032 \\
 n &= 737 \\
 p_2 &< .01 \\
 r^2 &= .1626
 \end{aligned}$$

The statistic, r^2 , indicates that 16 percent of the variation in systolic pressure is explained (statistically speaking) by the variable, BMI.

When subpopulations are examined separately in table 26, it becomes apparent that the heaviness of body build (BMI) is more strongly associated with blood pressure for Mexican-Americans than it is for Anglos and Blacks. Also, the two variables are more highly correlated for males than for females.

TABLE 26

PEARSON PRODUCT-MOMENT CORRELATION:
SYSTOLIC PRESSURE WITH BMI
(SUBPOPULATIONS)

	Males	Females
Mex.Amer.	$r = .4586$ $n = 206$ $p_2 < .01$ $r^2 = .2103$	$r = .4170$ $n = 194$ $p_2 < .01$ $r^2 = .1739$
Anglos	$r = .3315$ $n = 111$ $p < .01$ $r^2 = .1098$	$r = .1757$ $n = 124$ $p < .05$ $r^2 = .0308$
Blacks*	$r = .179$ $n = 30$ $p_2 < .n.s.$ $r^2 = .0322$	

*Blacks not differentiated by sex

The heaviness of body build, then, accounts for 21 percent of the variation in blood pressure for Mexican-American males, but only 3 percent for Anglo females. The correlation of BMI with systolic pressure did not reach levels of statistical significance for Blacks.

The question to be addressed at this point is: Do differences in the blood pressures of Mexican-Americans, Anglos, and Blacks correspond to differences among these groups in the body mass index? As indicated in table 27, Anglo youths who have the lowest blood pressures also have the lowest mean body mass index (i.e., have the leanest body builds).

TABLE 27
BREAKDOWN: BODY MASS INDEX BY ETHNICITY

	Mean	S.D.	N.
Mexican-Americans	.0319	.0060	439
Anglos	.0303	.0045	249
Blacks	.0314	.0050	30
Total	.0314	.0050	718

$$(F = 6.93; p < .01; \text{Eta}^2 = .0190)$$

Mexican-American teenagers have heavier body builds than Anglo teens, with Blacks being intermediate. It would appear, then, that the heaviness of body build may be related to differences in the mean systolic pressure among these groups, particularly the differences between Mexican-Americans and Anglos.

The higher mean systolic pressure of males in comparison to females, in contrast, does not appear to be related to sex differences in the mean BMI. As shown in table 28, there was no significant difference in the mean BMI of males and females.

TABLE 28
BREAKDOWN: MEAN BMI WITH SEX

	Mean	S.D.	N.
Males	.0315	.0055	365
Females	.0313	.0056	362
Total	.0314	.0056	727

($F = 0.267$; $p < n.s.$; $\text{Eta}^2 = .000$)

The distribution of the BMI for Mexican-Americans and Anglos is depicted in figure 4.

Just as the difference in blood pressure between Mexican-Americans and Anglos is greater for females than males, so too is the difference in BMI. This can be seen by examining tables 29 and 30, and figures 5 and 6.

TABLE 29
COMPARISON OF MEAN BMI BETWEEN
ETHNIC GROUPS: MALES

	Mean	S.D.	N.
Mexican-Americans	.0318	.0058	219
Anglos	.0308	.0048	119

($t = 1.60$; $p < n.s.$)

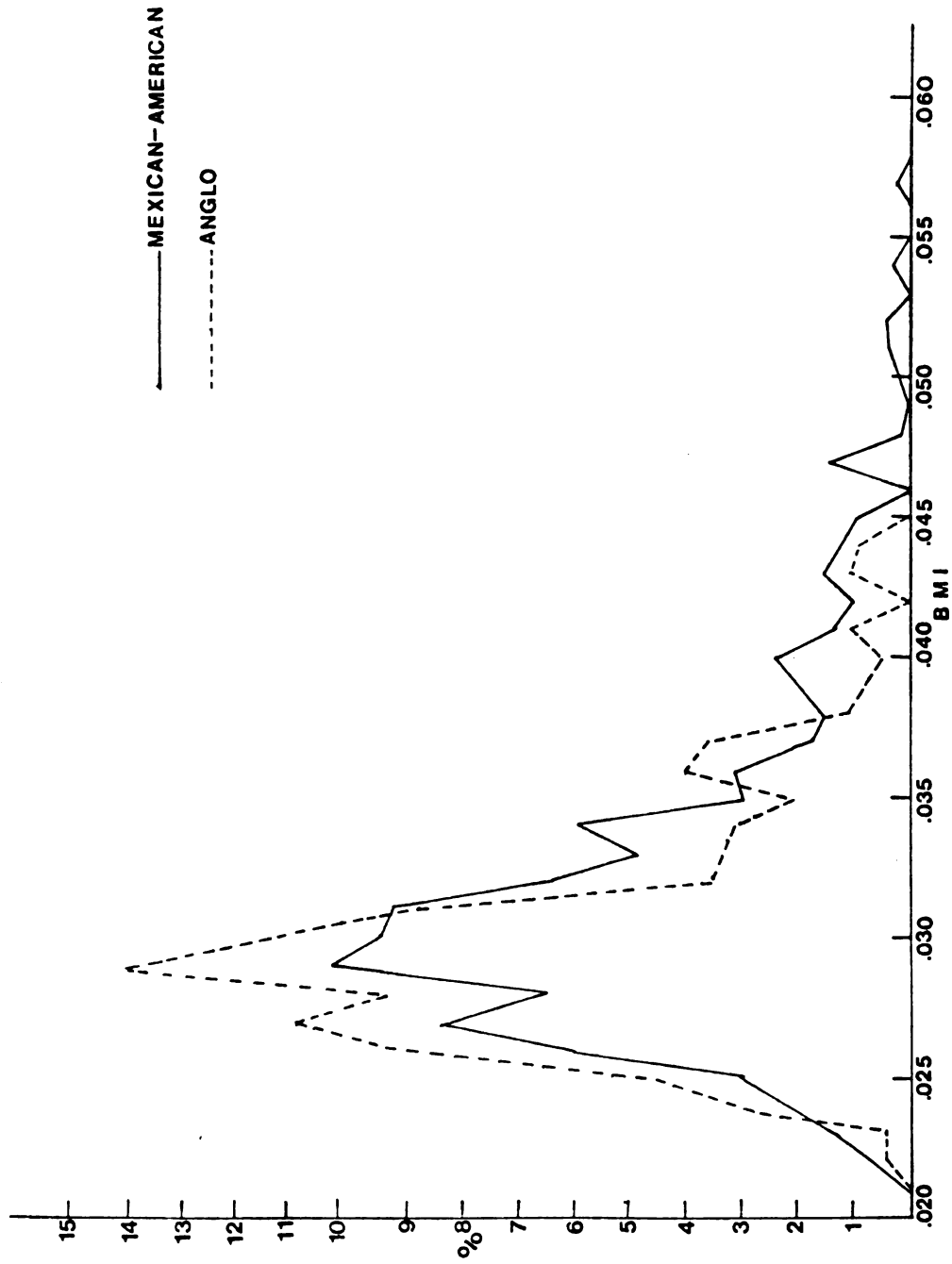


FIGURE 4 COMPARISON OF THE HEAVINESS OF BODY BUILD, MEXICAN-AMERICAN AND ANGLO:
BOTH SEXES

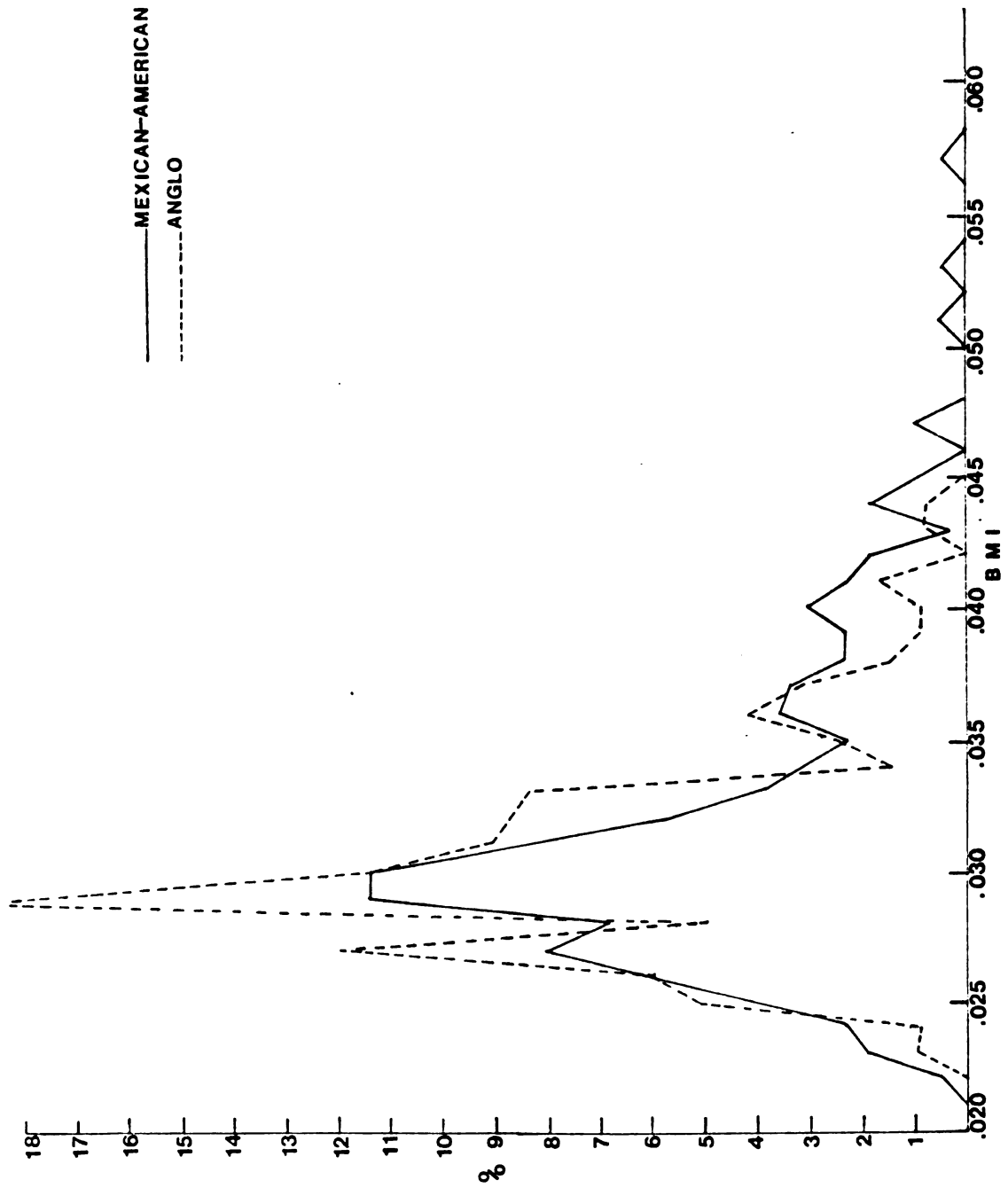


FIGURE 5 COMPARISON OF THE HEAVINESS OF BODY BUILD OF MEXICAN-AMERICAN AND ANGLO MALES

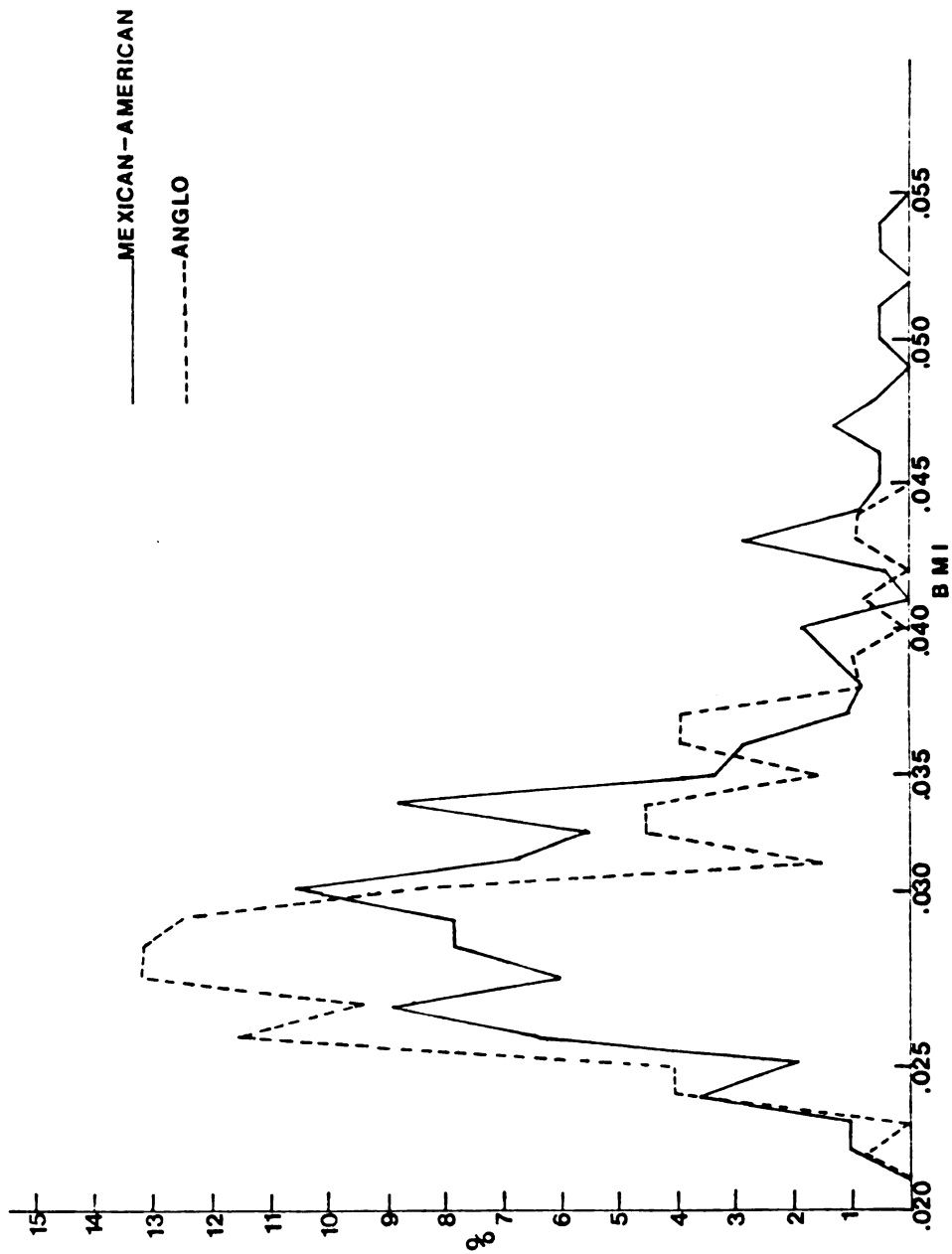


FIGURE 6 COMPARISON OF THE HEAVINESS OF BODY BUILD OF MEXICAN-AMERICAN AND ANGLO FEMALES

TABLE 30
COMPARISON OF MEAN BMI BETWEEN
ETHNIC GROUPS: FEMALES

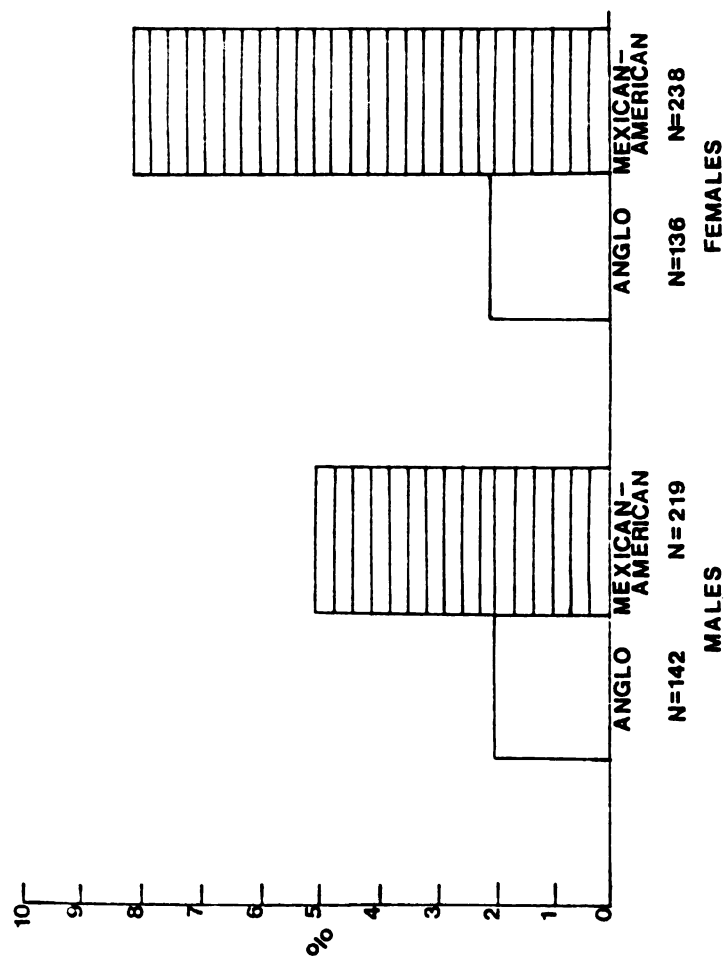
	Mean	S.D.	N
Mexican-Americans	.0320	.0061	218
Anglos	.0299	.0042	130

($t = 3.89$; $p < .01$)

The preceding figures show that there are many more Mexican-Americans, male and female, in the upper percentiles of the BMI distribution than there are Anglos. Using a very conservative criterion of obesity, 2 percent of Anglo males and females were found to be obese. In contrast, 5 percent of Mexican-American males and 7 percent of Mexican-American females were found to be obese. This can be seen in figure 7.

Triceps Skinfold Thickness

The distribution of triceps skinfold thicknesses among Corpus Christi adolescents parallels the distribution of the body mass index. Figures 8 and 9 indicate that Mexican-Americans are somewhat fatter than Anglos. This is especially true for females. It should be noted that, unlike the body mass index, the skinfolds of males and females differ greatly. These differences are of fundamental anatomical origin. Therefore, information regarding triceps skinfold must be presented separately for each sex.



OBESITY DEFINED IN TERMS OF A BODY MASS INDEX (lbs/inches²) OF AT LEAST .042. THIS CORRESPONDS TO 20% ABOVE IDEAL WEIGHTS FOR ADULTS OF HEAVY BODY BUILD, AS DEFINED BY THE METROPOLITAN LIFE INSURANCE CHARTS. .042 CORRESPONDS TO: 5'0": 152 lbs
5'5": 180 lbs
6'0": 217 lbs

FIGURE 7 PERCENTAGE OF OBESE ADOLESCENTS BY ETHNICITY AND SEX

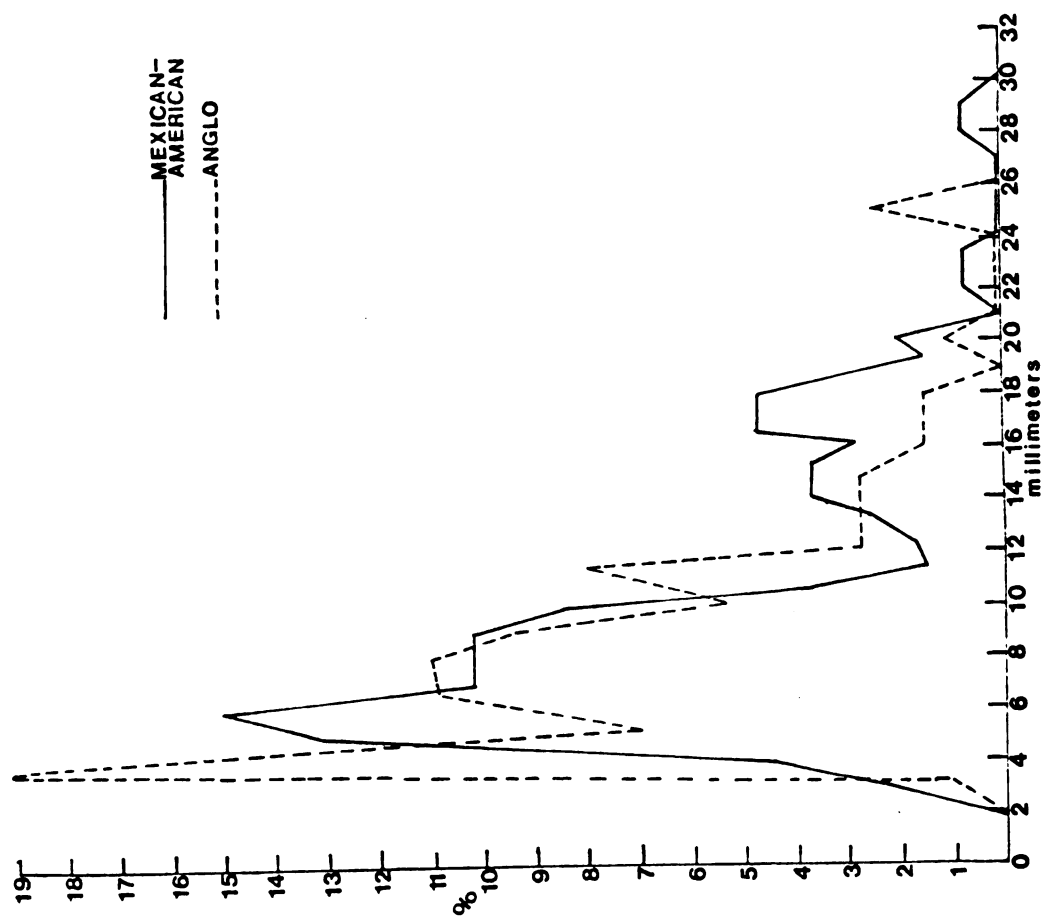


FIGURE 8 COMPARISON OF SKINFOLD THICKNESS!
MEXICAN-AMERICAN AND ANGLO MALES

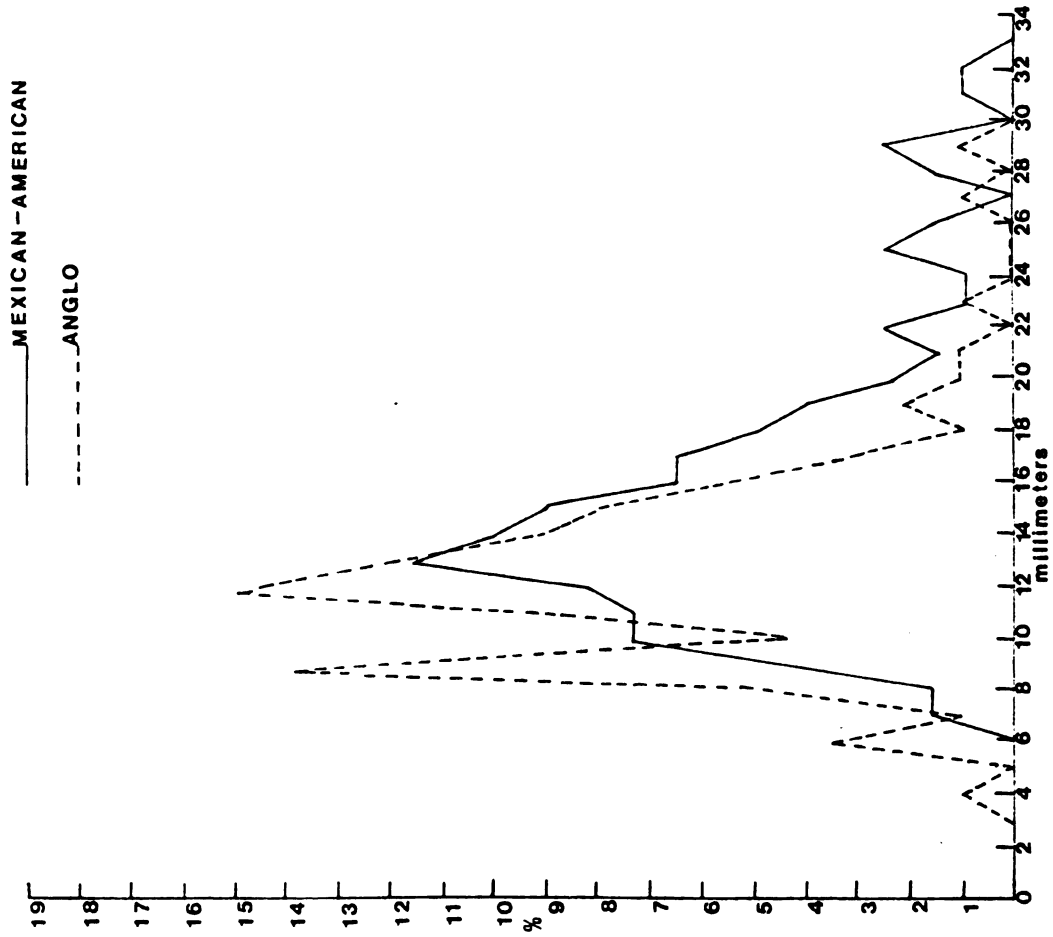


FIGURE 9 COMPARISON OF SKINFOLD THICKNESS:
MEXICAN-AMERICAN AND ANGLO FEMALES

As is the case with the BMI, the triceps skinfold thickness is correlated with systolic blood pressure more closely for males than females, and is a better predictor of blood pressure for Mexican-Americans than Anglos. This is shown in table 31.

TABLE 31
CORRELATION OF TRICEPS SKINFOLD TO
SYSTOLIC PRESSURE BY SEX
AND ETHNICITY

	Mexican-Americans	Anglos
Males	$r = .4093$ $n = 124$ $p_2 = .001$ $r^2 = .1675$	$r = .3002$ $n = 71$ $p_2 = .005$ $r^2 = .0901$
Females	$r = .2185$ $n = 194$ $p_2 = .001$ $r^2 = .0477$	$r = .0167$ $n = 86$ $p_2 = .439$ $r^2 = .003$

Diet

Both the heaviness of body build (as indicated by the body mass index) and a measure of body fat (triceps skinfold thickness) are positively correlated with systolic blood pressure. Given the strong relationship of these variables to systolic blood pressure, it would be useful to know whether there are any differences in the dietary behavior of the heaviest youths as compared to that of a control group. In order to investigate this question, the twenty-four-hour dietary recalls of youths from the highest decile of the BMI distribution ($BMI \geq .038$) were compared

to the dietary recalls of a randomly selected control group. Chi-square tests were performed in order to test for significant differences in six characteristics:

- (1) the consumption of potato chips or french fries
- (2) the consumption of fruit, vegetables, or fruit juice
- (3) the consumption of milk
- (4) the consumption of ice cream
- (5) the consumption of soda pop
- (6) the consumption of breakfast

There were differences between the heaviest youths and the control group at the .1 level of statistical significance for two of these characteristics: the consumption of soda pop, and the consumption of fruits, vegetables, or fruit juice. Although a significance level of .1 generally is not considered indicative of statistical significance, data presented in tables 32 and 33 suggest that there may be some interesting differences in the dietary behavior of the two groups.

TABLE 32

THE CONSUMPTION OF SODA POP BY
OBESE AND NONOBESE

Count Row	High BMI	Control	
Soda	36 59.0%	25 41.0%	61 53.5%
No Soda	21 39.6%	32 60.4%	53 46.5%
	57 50%	57 50%	114 100%

$$(x^2 = 3.53; \quad p < .1)$$

TABLE 33

THE CONSUMPTION OF FRUIT, VEGETABLES AND
FRUIT JUICES BY OBESE
AND NONOBESE

Count Row	High BMI	Control	
Fruit/Veg.	15 36.6%	26 63.48%	41 36.0%
No Fruit/Veg.	42 57.5%	31 42.5%	73 64.0%
	57 50%	57 50%	114 100%

$$(X^2 = 3.81; p < .1)$$

The heaviest teenagers were somewhat more likely to have consumed soda pop, and somewhat less likely to have had fruit, vegetables, or fruit juice.

Body Mass Index and Psychosocial Adaptation

One surprising finding of this study is that a number of PSAI items are correlated in a statistically significant manner with the body mass index. There are nine PSAI items with statistically significant inverse correlations with the body mass index. That is, for all nine of the items presented below, problematic psychosocial adaptation is associated with a heavy body build.

Item 5 r = -.1036 n = 727 p ₂ = .003 r ² = .011	Item 9 r = -.0751 n = 729 p ₂ = .021 r ² = .005	Item 12 r = -.0929 n = 726 p ₂ = .006 r ² = .009	Item 14 r = -.0663 n = 728 p ₂ = .037 r ² = .004	Item 33 r = -.1016 n = 489 p ₂ = .012 r ² = .010
Item 37 r = -.1041 n = 722 p ₂ = .003 r ² = .011	Item 40 r = -.0923 n = 725 p ₂ = .008 r ² = .008	Item 52 r = -.0908 n = 724 p ₂ = .007 r ² = .008	Item 56 r = -.0812 n = 723 p ₂ = .015 r ² = .007	

Of these nine PSAI items, four were also related in a statistically significant manner to systolic pressure. These items are: item 5, item 33, item 37, and item 52.

Of the ten PSAI factors, three had statistically significant correlations to BMI. These are:

Factor 3	Factor 4	Factor 6
$r = -.15$	$r = -.09$	$r = -.09$
$n = 553$	$n = 555$	$n = 553$
$p_2 < .01$	$p_2 < .05$	$p_2 < .05$
$r^2 = .026$	$r^2 = .008$	$r^2 = .008$

Examination of factor 3 shows that youths who least identified with general social norms tended to be heavier than others. This factor accounts for 2.6 percent of the variation in BMI. An examination of factor 6 shows that those youths who were the least well adapted to the peer environment had a higher mean body mass index (i.e., were heavier). From factor 4 it is apparent that youths who are most likely to use an emotional coping style have a higher body mass index.

Family History of Hypertension, Heart Attack, or Stroke

As was discussed in chapter 2, it is believed that heredity exerts a major influence over blood pressure. In this study, the effects of heredity upon the blood pressures of Corpus Christi adolescents could not be directly determined. Instead, youths were asked the following question: How many members of your immediate family have high blood pressure?

zero

one

two or more

The responses to this question were then associated with the blood pressures of the respondents. Data presented in table 34 show that there is a statistically significant relationship between systolic pressure and a family history of hypertension.

TABLE 34

MEAN SYSTOLIC PRESSURE WITH FAMILY HISTORY
OF HYPERTENSION: TOTAL POPULATION

	Mean	S.D.	N.
Zero	109.39	11.21	522
One	111.84	10.54	235
Two or More	113.81	12.37	43
Total	110.35	11.08	800

($F = 6.20$; $p < .01$; $Eta^2 = .015$)

This tendency for youths with a family history of hypertension to have higher blood pressure appears to exist both for Mexican-American and Anglos. Tables 35 and 36 show, however, that the effect did not quite reach levels of statistical significance when these two groups are examined separately. It is interesting to note that 39.4 percent of Mexican-American reported that at least one member of their family has hypertension, as compared to only 26.1 percent

for Anglos. Whether this reflects real differences in rate of hypertension between Anglo and Mexican-American adults in Corpus Christi is not known.

TABLE 35

MEAN SYSTOLIC PRESSURE WITH FAMILY HISTORY
OF HYPERTENSION: MEXICAN-AMERICANS

	Mean	S.D.	N.
Zero	109.39	11.21	522
One	111.84	10.54	235
Two or More	113.81	12.37	43
Total	111.78	11.47	431

(F = 2.74; p = n.s.; $\text{Eta}^2 = .012$)

TABLE 36

MEAN SYSTOLIC PRESSURE WITH FAMILY HISTORY
OF HYPERTENSION: ANGLOS

	Mean	S.D.	N.
Zero	106.54	10.49	184
One	109.45	9.43	59
Two or More	108.08	12.43	6
Total	107.26	10.29	249

(F = 1.81; p = n.s.; $\text{Eta}^2 = .014$)

Table 37 suggests that the association between the systolic blood pressure of adolescents and a family history of hypertension is at least partially explained by differences in the body mass index. According to the statistic, Eta^2 ,

the relationship between BMI and a family history of hypertension is even stronger than that between blood pressure and a family history of hypertension.

TABLE 37

BMI WITH FAMILY HISTORY OF HYPERTENSION:
TOTAL POPULATION

	Mean	S.D.	N.
Zero	.0307	.0050	522
One	.0324	.0064	234
Two or More	.0348	.0087	43
Total	.0314	.0055	797

(F = 16.36; p < .01; $\text{Eta}^2 = .039$)

The relationship between the body mass index and family history of hypertension was significant both for Mexican-Americans and for Anglos. By comparing data presented in tables 38 and 39, it is apparent that the relationship is more pronounced among Mexican-Americans.

TABLE 38

BMI WITH FAMILY HISTORY OF HYPERTENSION:
MEXICAN-AMERICANS

	Mean	S.D.	N.
Zero	.0310	.0052	263
One	.0331	.0069	139
Two or More	.0355	.0070	30
Total	.0319	.0059	432

(F = 11.00; p < .01; $\text{Eta}^2 = .049$)

TABLE 39
BMI WITH FAMILY HISTORY OF HYPERTENSION:
ANGLOS

	Mean	S.D.	N.
Zero	.0298	.0039	184
One	.0319	.0057	59
Two or More	.0303	.0051	6
Total	.0303	.0044	249

(F = 4.77; p < .01; $\text{Eta}^2 = .039$)

Family History of Heart Attack
or Stroke

Youths participating in this study were asked not only about a family history of hypertension, but also of heart attack and stroke. There appears to be a tendency for the systolic pressures of adolescents with such a family history to be somewhat higher than others. As shown in table 40, however, this tendency was not statistically significant for the study population as a whole.

When Mexican-Americans and Anglos are separately examined, however, it becomes apparent that the relationship between family history of heart attack or stroke and systolic pressure exists for Mexican-Americans only. This is apparent by examining tables 41 and 42. Any explanation, other than chance, for the nearly significant tendency shown in table 42 for Anglos with a family history of heart attack or stroke to have lower blood pressure is not known.

TABLE 40

MEAN SYSTOLIC PRESSURE WITH FAMILY HISTORY OF
HEART ATTACK OR STROKE: TOTAL POPULATION

	Mean	S.D.	N.
Zero	110.07	10.68	714
One	112.55	14.72	74
Two or More	113.37	12.34	12
Total	110.35	11.14	803

(F = 2.11; p = n.s.; $\text{Eta}^2 = .005$)

TABLE 41

BREAKDOWN: MEAN SYSTOLIC PRESSURE WITH
FAMILY HISTORY OF HEART ATTACK OR
STROKE: MEXICAN-AMERICAN

	Mean	S.D.	N.
Zero	111.18	10.84	379
One	115.66	15.37	46
Two	117.31	12.93	8
Total	111.77	11.44	433

(F = 4.11; p < .05; $\text{Eta}^2 = .019$)

TABLE 42

MEAN SYSTOLIC PRESSURE WITH FAMILY HISTORY
OF HEART ATTACK OR STROKE: ANGLO

	Mean	S.D.	N.
Zero	107.21	10.25	229
One	102.06	10.25	17
Two or More	102.33	2.47	3
Total	107.26	10.25	249

(F = 2.76; p = n.s.; $\text{Eta}^2 = .022$)

Geographic Mobility

It will be recalled from the literature review that geographic mobility has frequently been associated with high blood pressure. In this study, geographic mobility also was statistically related to the blood pressures of Corpus Christi adolescents, but in a manner opposite to that which other studies have found. Youths who have moved to Corpus Christi from elsewhere have significantly lower blood pressures than others. This is shown in table 43. Youths participating in the study responded to the following question: How long have you lived in the Corpus Christi area?

all my life

three years or less

more than three years, but not all my life

TABLE 43

GEOGRAPHIC MOBILITY WITH MEAN SYSTOLIC
BLOOD PRESSURE: TOTAL POPULATION

	Mean	S.D.	N.
All Life	111.35	11.36	466
<Three Years	105.98	11.73	70
>Three Years but Not All Life	108.95	11.05	203
Total	110.18	11.43	739

(F = 8.93; p < .01; Eta² = .023)

The tendency for youths who have lived the longest in Corpus Christi to have the highest blood pressures holds true both for Mexican-Americans and Anglos. This is shown in tables 44 and 45.

TABLE 44

GEOGRAPHIC MOBILITY AND MEAN SYSTOLIC
PRESSURE: MEXICAN-AMERICANS

	Mean	S.D.	N.
All Life	112.35	11.75	332
<Three Years	108.52	12.23	24
>Three Years but Not All Life	109.49	10.65	92
Total	111.56	11.56	448

(F = 3.04; p < .05; $\text{Eta}^2 = .014$)

TABLE 45

GEOGRAPHIC MOBILITY AND MEAN SYSTOLIC
PRESSURE: ANGLOS

	Mean	S.D.	N.
All Life	108.13	9.90	115
<Three Years	102.60	9.49	40
>Three Years but Not All Life	107.79	11.11	96
Total	107.12	10.32	251

(F = 4.58; p < .01; $\text{Eta}^2 = .036$)

From an examination of tables 44 and 45, it is apparent that this statistical relationship between mobility

and low blood pressure is not explained by the variable, ethnicity. Table 46 demonstrates that neither is it explained by differences in the body mass index between the geographically mobile and stationary.

TABLE 46
GEOGRAPHIC MOBILITY AND BMI

	Mean	S.D.	N.
All Life	.0314	.0055	450
<Three Years	.0313	.0045	67
>Three Years but Not All Life	.0316	.0061	199
Total	.0314	.0056	716

(F = 0.14; p = n.s.; $\text{Eta}^2 = .000$)

The explanation for this unexpected relationship between geographic mobility and low blood pressure is not entirely clear. In searching for possible explanations for this surprising finding, I examined the possibility that there could be differences between geographically mobile and stationary youths in the various parameters that have been associated in the literature with blood pressure. One parameter which I investigated was sodium intake. It was not possible to determine the sodium intake of students on the basis of their dietary recalls. Information on the sodium content of drinking water, however, is available.

The city of Corpus Christi, and nearly all of the participants in this study, receive their water from Lake

Corpus Christi, a reservoir northwest of the city. According to the 1978 report of the water division of the city government, the sodium content of Corpus Christi's water supply was 6.57 milliequivalents (meg) when sampled on April 4 of that year. The 1979 report from the city water division indicates a sodium content of 5.09 meg when sampled on 4/13/79. The Environmental Protection Agency (E.P.A.) has not set a maximum concentration limit for sodium in drinking water, but the American Heart Association has proposed that a limit of only 0.74 meg be set. According to the director of the city water division, Mr. Wayne Tibbits, 1.85 meg is considered a desirable sodium content. The sodium content of Corpus Christi's water supply varies depending on rainfall, sources of runoff, and rates of water consumption. Nevertheless, Mr. Tibbits stated that the overall salinity (NaCl) of Corpus Christi water is usually near to and not infrequently exceeds the upper limit set by the E.P.A. of 4.28 meg. According to Mr. Tibbits, the NaCl content of Corpus Christi's water frequently reaches levels of 6.00 - 6.50 meg.

In 1977, there was published in Archives of Environmental Health (Calabrese and Tuthill 1977) a survey of the blood pressures of high school sophomores in two contiguous communities that reportedly were similar with regard to size, income, educational level, and growth rate. The communities differed, however, in regard to the sodium content of their drinking water. The water supply of one of the communities

had a low sodium content of only 0.34 meg. The sodium content of the second community was 4.65 meg. The systolic and diastolic blood pressures of youths from the so-called high sodium community averaged from five to ten mm Hg higher than those of youths from the low sodium community, a difference that was statistically significant. On the basis of their findings, the authors draw the following conclusion:

The upward shifts in the blood pressure distributions for the high sodium community . . . represent a medically important as well as statistically significant finding. The students from the high sodium community appear to exhibit a blood pressure distribution several years older than that of their peers in the low sodium community. Since an individual tends to maintain the same relative position in the blood pressure distribution as he or she ages, the result is that persons at the high end of the distribution in the high sodium community will become hypertensive years earlier than persons in other communities [ibid:202].

In 1978, the editors of The Lancet commented on the significance of this study. Recognizing that sodium from drinking water accounts for only about 4 percent of the total daily sodium ingestion, the editors of The Lancet state,

Clinicians who have failed to detect any effects of dietary sodium upon blood pressure will tend to regard the effect of such miniscule differences with incredulity: certainly the possibilities for errors due to unrecognized cultural differences are great. Nonetheless, differences in drinking water sodium operate for many years in stable communities, and a sustained minor deviation in sodium intake might have a different action from an acute change of dietary habit. This requires further examination [Lancet 1978:1137].

The sodium content of Corpus Christi water, when sampled in 1978, was nearly one-third higher than that of the "high sodium community" in the survey just reported.

Although I have no data on the sodium content of the communities from which youths moved, it is unlikely that it would be as high as that of Corpus Christi. As stated by the editors of The Lancet, this is a question which requires further study.

Multiple Regression

In this chapter we have reviewed the influence on blood pressure not only of indicators of psychosocial adaptation, but also of characteristics associated with the biological dimension of adaptation. Social science studies of blood pressure almost always have focused on psychological and social characteristics believed to influence blood pressure vis a vis the activation of the General Adaptation Syndrome, the Defense-Alarm Response, or through other similar models. This study was centered around the inter-related hypotheses that Mexican-Americans and Blacks would have higher blood pressures than Anglos; Mexican-Americans and Blacks would have more problematic psychosocial adaptation, and, indicators of problematic psychosocial adaptation would be related to high blood pressure. On the basis of bivariate statistical analyses, Mexican-Americans and Blacks were found to have higher blood pressures than Anglos; Mexican-Americans also were found to have more problematic psychosocial adaptation than Anglos. The expected relationship between indicators of problematic psychosocial adaptation and high blood pressure was very small, but many more psychosocial items and factors were correlated with blood

pressure than would be expected by chance. Nonetheless, the body mass index, sex, family history of hypertension, geographic mobility, and ethnicity all accounted for more variation in blood pressure than any psychosocial item or factor.

When analyzing these bivariate statistical studies, it must be remembered that a relationship between blood pressure and any independent variable may be attributable to the covariation of that variable with another. For example, indicators of problematic psychosocial adaptation were correlated both with blood pressure and the body mass index. In that the body mass index explains far more variation in blood pressure than any indicator of psychosocial adaptation, it is entirely possible that the relationship of the psychosocial indicator to blood pressure is attributable to the influence of the body mass index. In order to determine the relative contribution of the various influences upon blood pressure, a hierarchical multiple regression analysis was performed.

In the multiple regression, mean systolic blood pressure is the dependent variable. The following independent variables were entered into the analysis in the order in which they are presented below in table 47. Also presented in table 47 is the mean and standard deviation of each independent variable.

Only interval level variables may be entered into a multiple regression analysis. Nominal variables may be entered, however, if they are transformed into dummy

TABLE 47
MEANS AND STANDARD DEVIATIONS OF INDEPENDENT
VARIABLES IN MULTIPLE REGRESSION

Variable	Mean	Standard Deviation
Age	15.50	3.49
Sex	1.50	0.50
Body Mass Index	0.031	0.005
Factor 1	29.96	6.63
Factor 2	20.30	3.26
Factor 3	6.96	1.39
Factor 4	-2.78	2.36
Factor 5	14.59	2.74
Factor 6	21.12	3.94
Factor 7	12.26	1.93
Factor 8	3.16	1.18
Factor 9	-4.52	1.91
Factor 10	6.10	1.43
Pulse	77.97	11.29
Ethnicity		
Mexican-Americans	0.56	0.50
Anglos	0.39	0.49
Blacks	0.04	0.20
Family History of Hypertension		
No One	0.65	0.48
One Person	0.29	0.45
Geographic Mobility		
All Life in Corpus Christi	0.61	0.49
Less than Three Years	0.09	0.29

variables. When a nominal variable such as "sex" is dichotomous, it has the statistical properties of an interval level variable and can be entered into the equation without

transformation. In this analysis, males were assigned the value "1," and females "2." The variables ethnicity, family history of hypertension, and geographic mobility were transformed into sets of dummy variables. According to Nie Hull and Jenkins et al. (1974:374), dummy variables are created "by treating each category of a nominal variable as a separate variable and assigning arbitrary scores for all cases depending on their presence or absence in each of the categories." Although no information is lost by transforming nominal variables into sets of dummy variables, one category of each nominal variable must be excluded from the regression and is considered the reference category. The mean value for each of the categories of ethnicity, family history of hypertension, and geographic mobility represents the percentage of cases that belong in that category. For example, 56 percent of the cases in this regression analysis are Mexican-Americans, 39 percent are Anglos, and 4 percent are Black, making for a total of 99 percent. By inference, 1 percent of the cases belong to the reference category, "other." Only cases for which there is complete information on all variables in this analysis are included in the multiple regression. The total number of cases is 553.

In addition to the list of independent variables presented above, twenty-nine interaction variables were also entered into the equation. These variables serve the purpose of testing for synergistic relationships between two independent variables in relation to the dependent variable. For

example, it was suggested that different coping styles may tend to mitigate or accentuate the psychological or somatic effects of difficult social circumstances. For this reason, tests for interaction were conducted between factor 4, Emotional Coping Style, and the other nine factors. If the interaction of two variables significantly increases the amount of variation in blood pressure over that which is explained by merely adding the effects of the two variables, then an interaction effect has been identified. Tests for interaction also were conducted between the variable, BMI, and the ten psychosocial factors and between "pulse" and the ten factors.

Only one statistically significant interaction ($p < .01$) was identified. A synergistic effect on blood pressure was found in the interaction of pulse and factor 3, The Degree of Identification with General Social Norms. The combination of fast pulse and nonidentification with general social norms tended to increase blood pressure. This is consistent with the previously reported finding that the influence of indicators of problematic psychosocial adaptation is increased when youths with fast pulses are separately examined. According to defense-alarm theorists such as Brod, it is among these youths that the influence of psychosocial factors on blood pressure should be greatest. Since this is the only interaction variable that was found to be related to blood pressure, it is the only one for which data will be presented. The mean value of the interaction variable "Factor Four X Pulse" is 544.29. The standard deviation is 135.13.

Multiple Regression Findings are summarized in table 48. For each independent variable, the following statistics are presented: Multiple R, R^2 , R^2 Change, B-Weight and Beta Weight. Multiple R is a measure of the strength of the relationship of all independent variables entered into the equation up to and including the variable in question. R^2 indicates the percentage of variation in blood pressure for which the same independent variables are responsible. R^2 Change represents the additional percentage of variation in blood pressure that is attributable to the last independent variable (or set of variables in the case of the dummy variables corresponding to ethnicity, family history of hypertension, and geographic mobility) entered into the equation. B-Weight is the unstandardized regression coefficient, and Beta-Weight is the standardized regression coefficient. The letter "a" next to the R^2 Change indicates that the additional amount of variation in blood pressure attributable to that variable (or set of dummy variables) is significant at the $p < .05$ level. The letter "b" indicates a confidence level of $p < .01$.

An examination of table 48 shows that eight of the eighteen independent variables account for statistically significant changes in blood pressure. By far, the greatest influence upon blood pressure is the body mass index. Over 13 percent of the total variation in blood pressure is attributable to the BMI. The second most powerful predictor of blood pressure is pulse, which accounts for only 3 percent

TABLE 48

SUMMARY OF MULTIPLE REGRESSION FINDINGS

Variable	Multiple R	R ²	R ² Change	B-Weight	Beta- Weight
Age	0.062	0.004	0.004	0.110	0.340
Sex	0.155	0.024	0.020 ^b	-0.161	-3.452
Body Mass Index	0.399	0.159	0.135 ^b	0.342	0.662
Factor 1	0.404	0.163	0.004	0.126	0.204
Factor 2	0.104	0.173	0.010 ^b	0.068	0.225
Factor 3	0.416	0.173	0.000	0.276	2.131
Factor 4	0.430	0.185	0.012 ^b	0.111	0.503
Factor 5	0.431	0.186	0.001	-0.031	-0.120
Factor 6	0.436	0.190	0.004	-0.099	-0.258
Factor 7	0.436	0.190	0.000	-0.017	-0.095
Factor 8	0.437	0.191	0.001	0.021	0.195
Factor 9	0.442	0.195	0.004	0.027	0.153
Factor 10	0.442	0.196	0.000	-0.010	-0.076
Pulse	0.479	0.230	0.034 ^b	0.378	0.359
Interaction of F4 and Pulse	0.488	0.239	0.009 ^b	-0.325	-0.026
Ethnicity	0.511	0.261	0.023 ^b		
Mex-Am.				-0.068	-1.476
Anglo				-0.189	-4.166
Black				0.014	0.783
Family History of Hypertension	0.518	0.269	0.007		
No One				-0.018	-0.408
One Person				0.075	1.783
Geographic Mobility	0.535	0.286	0.018 ^b		
All Life in C.C.				0.110	2.420
Less than 3 Years				-0.065	-2.395

The regression Constant, "A," is 60.229.

of the variation in blood pressure. Ethnicity, sex, and geographic mobility each account for approximately 2 percent. The two psychosocial factors and the interaction variable each account for about 1 percent of the variation in blood pressure.

Factor 2, *Adaptation in the Family Environment*, is correlated with blood pressure in a manner contrary to hypothesis 3. Less problematic psychosocial adaptation in the home environment is associated with high blood pressure. As was previously stated, this unexpected correlation is probably due to the fact that Mexican-Americans have higher blood pressures than Anglos. This factor is the only one in which Mexican-Americans clearly have less problematic psychosocial adaptation than Anglos. Factor 4 measures the propensity to react to things going wrong in an emotional way; that is, by becoming frustrated and upset with oneself or by projecting anger outward. As previously reported, the tendency to react to problems in these two ways covaried. Youths who were less likely to either outwardly express anger or become frustrated and upset with oneself had higher blood pressures. The defense-alarm theory would predict that persons who do not outwardly express emotions such as anger would have higher blood pressures. Such was found to be the case in this study with item 61D, one of the three PSAI items of which factor 4 is composed. The tendency for youths who are least likely to react to problems by becoming frustrated and upset with themselves to have lower blood pressures does

not coincide with what would be expected by the defense-alarm theory. Therefore, the meaning of factor 4 in relation to hypothesis 3 is ambiguous.

Earlier in the chapter, it was demonstrated that the influence of psychosocial items on blood pressure is accentuated among youths with rapid pulses. The multiple regression demonstrates that the interaction of factor 4 with pulse exerts a synergistic influence on blood pressure. Youths who are least likely to react to problems with an emotional coping style and who also have rapid pulses tend to have higher blood pressures. Finally, it will be recalled from the beginning of this chapter that factor 9, General Degree of Social Involvement, also had a significant bivariate correlation with blood pressure. Youths who were least involved and most alienated from their surroundings had higher blood pressures. In the multiple regression, however, factor 9 accounts for only 0.4 percent of the variation in blood pressure. The effect is not statistically significant. The influence of variables which precede factor 9 in the regression equation reduces the amount of variation in blood pressure explained by this factor. The reduction of influence in this factor is principally explained by covariation with the body mass index.

It is interesting to note that preceding variables in the equation reduce the influence on blood pressure of the variable, "Family History of Hypertension" to the point that its effect is no longer statistically significant.

Most of the reduction in the influence of this variable is due to covariation with the body mass index. It is also important to note that the influence over blood pressure of the variables, ethnicity, and geographic mobility, was not fully explained by covariation with other variables. After accounting for the influence of sex, age, the body mass index and the psychosocial factors, "ethnicity" continues to exert a significant influence over blood pressure. After controlling the same variables, geographically mobile persons still tend to have lower rather than higher blood pressures than life-long residents of Corpus Christi.

CHAPTER VIII

SUMMARY AND CONCLUSIONS

Psychosocial Adaptation, Ethnicity and Blood Pressure

The primary purpose of this study has been to determine whether problematic psychosocial adaptation is one of the factors exerting an influence over the blood pressures of Corpus Christi's adolescents. More specifically, it was hypothesized that Mexican-Americans and Blacks would have higher blood pressures than Anglos; Mexican-Americans and Blacks would tend to have more problematic psychosocial adaptation than Anglos; and indicators of problematic psychosocial adaptation would be correlated with high blood pressure. Mexican-Americans and Blacks were found to have significantly higher blood pressures than Anglos. Mexican-Americans also had more problematic psychosocial adaptation than Anglos, based on the number of PSAI items and factors on which the two groups significantly differed in their mean scores. It could not be confirmed, however, that the psychosocial adaptation of Blacks was more problematic than that of Anglos. In chapters 5 and 6, ethnohistorical and ethnographic data were presented in order to describe the sociocultural circumstances that help explain

why Mexican-American youths would be more likely than Anglos to have difficulties in their psychosocial adaptation.

Conclusions as to the third hypothesis regarding the relationship of indicators of problematic psychosocial adaptation of high blood pressure, are somewhat harder to reach. Fourteen of the sixty-four items on the PSAI were correlated with blood pressure in a manner consistent with hypothesis 3. Although the correlations are quite weak, far more items were related to blood pressure in the manner predicted than would be expected by chance (i.e., three at $p < .05$). Three PSAI items were correlated with blood pressure in a manner clearly contrary to that predicted. Despite the large number of individual PSAI items that were statistically related to blood pressure, none could predict more than 1 percent of the total variation in systolic pressure. This is only one-sixteenth the amount of variation that is attributable to the body mass index. Also, it is difficult to determine by examining these fourteen PSAI items exactly how psychosocial adaptation is related to blood pressure. The fourteen items were not concentrated in any one psychosocial environment such as that of the school or peers, nor were particular dimensions of psychosocial adaptation such as "sense of adequacy" or "relatedness" especially salient.

In an attempt to determine whether any underlying dimensions of psychosocial adaptation could be identified and related to blood pressure, a factor analysis was conducted. Ten factors composed of thirty-eight PSAI items

were identified. Three of these ten factors had statistically significant correlations with blood pressure, but like the individual PSAI items, none explained more than 1 percent of the variation in blood pressure. The factors correlated with blood pressure are: factor 2, Adaptation in the Family Environment; factor 4, Emotional Coping Style; and factor 9, General Degree of Social Involvement. Of these three factors, factor 2 was correlated with blood pressure in a manner opposite to that predicted by hypothesis 3. Regarding factor 4, youths who are least likely to cope with problems in an emotional way (e.g., by becoming upset and frustrated with oneself, or by outwardly expressing one's anger) were found to have lower blood pressures. The meaning of the correlation of factor 4 to blood pressure is not entirely clear. It would be expected by defense-alarm theorists that youths who are more likely to react to problems by becoming upset and frustrated with themselves would have higher blood pressures. On the other hand, the defense-alarm theory would predict, as was found here, that youths who are least likely to outwardly express anger would have higher blood pressure. Contrary to expectations, it was learned from the factor analysis that persons who do not outwardly express their anger when coping with problems are also less likely to become frustrated and upset with themselves. Finally, regarding factor 9, youths who are least involved and most alienated from their surroundings tend to have higher blood pressures. This is consistent with hypothesis 3.

In sum, the examination of relationships between the ten factors and blood pressure does not provide unambiguous support for hypothesis 3. Quantitative measures of psychosocial adaptation are weakly associated with blood pressure, but neither the examination of individual PSAI items nor the factors sheds much light on how this occurs. The examination of relationships between individual PSAI items and blood pressure provided more consistent evidence in support of hypothesis 3 than did the factors. There are at least two possible explanations for this: (1) Five of the fourteen PSAI items that individually were correlated with blood pressure were not included in the factor analysis. These five items had to do with adaptation in extracurricular activities. Since nearly half of the youths in this study did not participate in any such activities they did not respond to these items. To have included these items on extracurricular activities in the factor analysis would have necessitated the exclusion from the analysis of all youths who did not participate in such activities. (2) The correlations between blood pressure and individual PSAI items are just too weak to exert a consistent and significant influence over blood pressure when grouped into factors.

By far, the greatest influence over blood pressure is attributable to the body mass index. Youths with the heaviest body builds have the highest blood pressures. A surprising finding of this study is that not only are heavy youths more likely to have high blood pressure, but they

also have more problematic psychosocial adaptation. Whether problematic psychosocial adaptation is causally related to the heaviness of body build is not known. Problematic psychosocial adaptation may be related to the heaviness of body build by influencing the likelihood of overeating or underexercise. On the other hand, many heavy youths who are fat may experience psychosocial difficulties due to the stigma of obesity. The association of indicators of problematic psychosocial adaptation with the body mass index is an issue which deserves further study.

Also, the association of the body mass index with problematic psychosocial adaptation raises the question of the means by which psychosocial adaptation may be related to blood pressure. Twenty-seven percent of the individual PSAI items and three of the ten factors were correlated, albeit weakly, with systolic pressure. The multiple regression showed, however, that due to covariation with variables that preceded it in the equation, principally BMI, one of the three factors no longer exerted a significant effect upon blood pressure. This was factor 9. It appears that at least some of the apparent influence of psychosocial adaptation on blood pressure is actually explained by the heaviness of body build. If problematic psychosocial adaptation indeed influences the blood pressures of Corpus Christi adolescents vis a vis the activation of the defense-alarm response, it may do so for only a small portion of the population. When the total population is examined, the massive influence of

the body mass index may mask whatever influence on blood pressure that psychosocial adaptation may have. An effort was made to determine whether this might be the case.

According to defense-alarm theorists such as Brod (1971), Henry and Cassel (1969) and Guttman and Benson (1971), the early stages in the development of hypertension should be characterized by an increased cardiac output and a rapid pulse. In this study, the PSAI responses of youths in the highest fifteen percentiles in the blood pressure distribution were compared with those of a control group. The PSAI responses of the high blood pressure group did not significantly differ from those of the control group. However, when the PSAI responses of the control group were compared with those of persons from the high blood pressure group who also had rapid pulses, differences in psychosocial adaptation became apparent. The two groups significantly differed in their responses to six PSAI items. On five of these items, the responses of the high blood pressure-rapid pulse group were indicative of more problematic psychosocial adaptation. In addition, the multiple regression identified an interaction effect between factor 4 and pulse rate. The combined effect of these two variables on blood pressure was greater than their separate effects. These findings are consistent with the proposition that the influence of psychosocial adaptation on blood pressure is more salient among youths with rapid pulses. Thus, at least for the subpopulation of youths with rapid pulses, psychosocial adaptation

does appear to exert a significant influence on blood pressure.

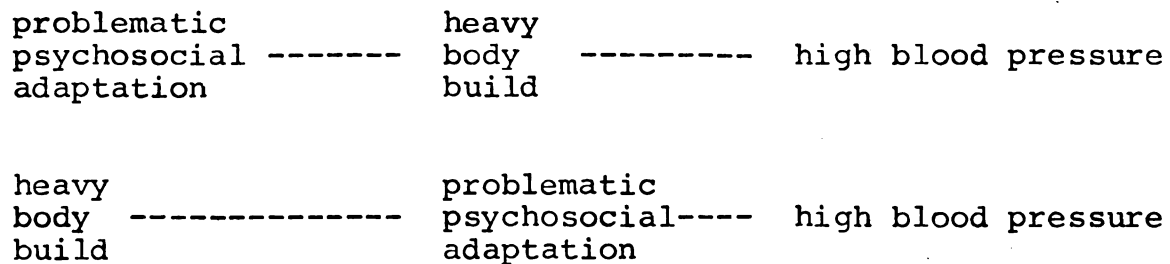
The detected influence of psychosocial adaptation on blood pressure among youths in this study is not great, and it may only exist among those youths who also have rapid pulses. Nonetheless, it is argued that this finding is of considerable significance. Although various measures of psychosocial stress have been associated with high blood pressure among adults, never before have indicators of problematic psychosocial adaptation been linked to high blood pressure among children and adolescents.

It will be recalled from chapter 2 that the "structural" studies described by Stahl and Grimm were criticized for their poor methodology. In such studies, the objective is to associate particular social and psychological characteristics with blood pressure without attempting to verify how or why they may be related. When a statistical association is identified, the causal process is presumed to coincide with the researcher's preconceived model. Typically, the model is:

social	-----	experience	-----	activation	-----	high
stressors		of psycho-		of defense-		blood
		social stress		alarm		pressure
				response		

In this study, an ecological approach was employed in order to avoid the pitfalls of the structural studies. The application of an ecological approach to the problem of the identification of influences upon blood pressure implies

the simultaneous examination of three categories of variables: those associated with the biological, psychosocial and socio-cultural aspects of human adaptation. Three alternative models were identified by which psychosocial adaptation might be related to blood pressure. The first is the defense-alarm model which was presented above. This is the model by which stress-related variables are presumed to influence blood pressure in most studies. It was expected that this model would explain the hypothesized relationship between indicators of problematic psychosocial adaptation and blood pressure in this study. Strong evidence in support of this model is only found among youths with rapid pulses. There is also support for one or both of the following models relating psychosocial adaptation to blood pressure



Problematic psychosocial adaptation is related both to a high body mass index and to high blood pressure. Whether problematic psychosocial adaptation is causally related to being heavy, or whether being heavy is a cause of problematic psychosocial adaptation is not known.

Although statistical tests could not directly identify anything more than a minor influence of psychosocial variables upon blood pressure, there is indirect evidence

that suggests that its relevance to blood pressure may be somewhat greater. As has been stated, Mexican-American youths in this study have a higher average blood pressure than Anglo youths. One of the reasons for this is that Mexican-Americans are more likely to have heavier body builds. Another likely explanation is related to differences in psychosocial adaptation. Of the sixty-four items on the PSAT, the responses of Mexican-Americans were indicative of more problematic psychosocial adaptation on thirty-four. Of the ten psychosocial factors, the scores of Mexican-American are clearly indicative of more problematic psychosocial adaptation on three. Nine of the thirty-four PSAT items, and one of the three factors were correlated to blood pressure. However, it is interesting to note from the multiple regression analysis that after the statistical effects of BMI and the psychosocial factors are taken into account, ethnicity still exerts a significant influence over blood pressure. Anglos continue to have lower blood pressures than Mexican-Americans and Blacks. The obvious question is: What explains these differences? It is possible that they may be related to differences in psychosocial adaptation which the quantitative measurements employed in this study were not able to detect.

As was argued by the teacher from Plainview High School, Mr. Dominguez, the problems confronting his students are likely to become much more severe once they emerge from the relatively sheltered environment of school and family.

According to Dominguez, "the real problems" will begin when they have to try to make a living and support a family. Almost all youths in this study would like to do well in school and eventually get what one student called "an air conditioned job" after they graduate. Some, however, are doing better in regards to these goals than others. As was argued in chapter 5, the potential for negative psychological and somatic effects related to the inability to reach one's objectives may be mitigated somewhat by certain social adaptations. Foremost among these is a tendency for youths with the least favorable opportunity structures to concentrate their interests on social and recreational activities unrelated to the official norms of school and society. Later in life, the viability of such adaptations becomes more questionable.

Stern, Gaskill and Allen (1980) found that the prevalence of hypertension among Mexican-Americans in Laredo, Texas is considerably higher than the national prevalence rate for White Americans. Kraus, Borhani and Franti (1980) reached a similar conclusion in a study conducted in Sacramento, California. No information is available on the prevalence of hypertension among Anglo and Mexican-American residents of Corpus Christi, although a much higher percentage of Mexican-American youths in this study reported a history of hypertension in their families than did Anglos. In light of this evidence regarding the high rate of hypertension among Mexican-American adults, and the relatively

higher blood pressure of Mexican-Americans in this study when compared to Anglos, it is argued that Mexican-American youths in Corpus Christi will be more likely to develop hypertension as adults than Anglos. It is also expected that problematic psychosocial adaptation will become an increasingly important determinant of blood pressure as they grow older. A follow-up study would be extremely valuable to assess the accuracy of these predictions.

Other Findings

The unexpected relationship between low blood pressure and geographic mobility illustrates the deficiencies of structural models of social epidemiologic research. As has been reported, geographic mobility repeatedly has been associated in the literature with high blood pressure. It has generally been assumed that the reason for this is that mobility is a stressor; the stressor activates the general adaptation syndrome or defense-alarm response which in turn leads to high blood pressure.

Through the utilization of an ecological model in this study, it has been demonstrated that such assumptions are not always valid. Alternative patterns of relationships between sociocultural phenomena such as mobility, psychosocial factors, and biological factors need to be explored before reaching conclusions regarding causal processes. It is suggested that one possible explanation for this surprising relationship between mobility and low blood pressure is the high sodium content of Corpus Christi's water. In that

sodium consumption is known to exert an influence upon blood pressure, it is hypothesized that the longer that one has lived in Corpus Christi, and drunk its salty water, the higher one's blood pressure is likely to be. The possible influence of the sodium content of the water supply upon blood pressure is a topic which requires further study.

Another important finding of this study is in regards to the characteristics of youths with a family history of hypertension. Teenagers who reported that at least one member of their family was hypertensive had significantly higher blood pressure than others. This finding was expected, and is consistent with the findings of many other studies. The relationship of a family history of hypertension to one's own blood pressure is usually explained primarily in terms of heredity. In this study, however, it was discovered that youths with a family history of hypertension were also significantly heavier than other youths. This was especially true for Mexican-Americans. When the influence of the body mass index was statistically controlled in the multiple regression, family history of hypertension no longer exerted a significant influence upon blood pressure.

Anthropology and the Study of Blood Pressure

Anthropologists and other social scientists who have studied influences upon blood pressure have traditionally limited their investigations to the study of factors which are believed to be related to stress. This unidimensional

approach to the study of blood pressure is in its own way as narrow and artificially bounded as most biomedical studies. When comparing blood pressure studies conducted by social scientists and biological scientists, one gets the impression that the two bodies of literature are totally unrelated. Like so many other diseases, hypertension is not a unitary entity with an unvarying etiology. It cannot be properly understood in the abstract. Rather, the causes of hypertension must be sought in the adaptation of individuals and populations to specific environments. Human adaptation is a multidimensional phenomenon involving biological, psychosocial and sociocultural processes. All have an influence on health, in general, and blood pressure in particular. A complete understanding of the determinants of hypertension requires the investigation of all three dimensions.

Clearly, this formidable task would benefit from a multidisciplinary approach. In this study, the input of physical and biological scientists would be helpful in the investigation of the relationship between blood pressure and the sodium content of drinking water. Another important question that would benefit from an interdisciplinary approach is the relationship between overweight and blood pressure. Given the tremendous influence of the body mass index upon blood pressure, much more attention needs to be devoted to this issue. It would have been useful in this study to have examined in greater detail questions such as:

Why are Mexican-Americans, especially females, more likely to be obese than Anglos?

How is the diet of Corpus Christi teenagers related to the likelihood of being obese?

How do foodways vary among ethnic and class groups?

Are there ethnic differences in the definition of an ideal body build, or in answer to the question: How fat is too fat?

To what extent are exercise patterns related to overweight?

To what extent are exercise patterns influenced by social, cultural and economic differences?

It has been argued by Aaron Antonovsky (1979) that studies of health and illness too often are presented from a pathogenic rather than salutogenic perspective. That is, efforts are directed to the discovery of causes of disease rather than to the maintenance well-being. This criticism could be applied to this study. The elevation of blood pressure is only one of many possible outcomes of the multi-dimensional process of adaptation upon which one could focus. An alternative approach might have addressed the question: How is it that so many youths can thrive both socially and biologically in the face of so many challenges to well-being? Such a study would examine the same process of adaptation, but would not limit its focus to only one of many possible outcomes.

Implications for the Prevention of Hypertension

Few of the adolescents in this study were found to have blood pressures which, by adult standards, would be

considered hypertensive. Retrospective studies have shown, however, that persons with relatively high blood pressures for their age during childhood and adolescence are more likely to become hypertensive later in life. Mexican-American and Black youths in this study were found to have significantly higher blood pressures than Anglos. It is known that hypertension is especially prevalent among Black Americans nationwide, and that the prevalence rate of hypertension among Mexican-Americans has been found to be considerably higher than that of Anglos in at least two separate studies. To the extent that hypertension has its origins in youth, it is useful to identify the characteristics that influence the blood pressures of teenagers in Corpus Christi.

Certainly the greatest single influence upon blood pressure for Corpus Christi's teenagers is the heaviness of body build. The prevention and control of overweight during youth undoubtedly would be the most effective means of preventing hypertension, especially for Mexican-Americans. Overweight is also associated with adult onset diabetes, which is known to be particularly common among Mexican-Americans (Warner et al. 1979). Many overweight students who I interviewed expressed a strong desire to lose weight, and some expressed interest in the possibility of establishing programs to accomplish this at school. It is suggested that the establishment of a school-based program to prevent obesity and to assist the already obese in weight reduction would be a cost-effective means of promoting the public

health, in general, and in the prevention of hypertension, in particular. Such a program would combine physical activities such as intramural sports and aerobic dancing with the promotion of sound dietary habits. A more intensive program involving both diet and exercise should be made available to students who are already overweight, and who have expressed an interest in weight reduction. It is recognized of course that, given the structure of existing physical education and athletic programs, teachers and coaches either would have to be relieved of some of their present responsibilities, or additional staff would be required.

The primary focus of this study has been the investigation of the relationship of sociocultural circumstances to the psychosocial adaptation of Corpus Christi's teenagers, and the relationship of this, in turn, to blood pressure. At the most, it appears that psychosocial adaptation exerts only a minor influence upon blood pressure when the study population is viewed as a whole. It is likely that for a small portion of the population, however, problematic psychosocial adaptation may be the most important influence. Also, it is quite possible that later in life psychosocial influences over blood pressure may become more salient. To the extent that problematic psychosocial adaptation is associated with high blood pressure, the elimination of some of its causes which were discussed in this study would have a beneficial effect. Of course, the benefits of this for the prevention of hypertension would constitute only a small fraction of the overall potential benefit.

APPENDIX 1

FORMS AND QUESTIONNAIRES USED IN THIS STUDY

STUDENT'S NAME

Dear Parent:

Heart Disease is the leading cause of death among adults in South Texas. It is now believed that one's chances of having a heart attack are greatly affected by the habits and life style which we establish in youth.

The Children's Heart Program of South Texas is sponsoring a research project that will help to better identify those things that affect the chances that young people may eventually get high blood pressure or have a heart attack. The research involves asking questions of students about factors related to the way they live which may affect their chances of getting heart disease. Questions will also be asked about the family's history of heart attack, stroke, and high blood pressure. Height, weight, pulse, and blood pressure will also be measured. The research will be conducted in conjunction with a unit on the prevention of heart disease in your child's health class. Although the findings of this research project will be made public in the form of a doctoral dissertation, the names of individual students will not be revealed.

Please indicate whether or not you grant your permission for your child to participate in this study by signing your name in the appropriate space below.

Sincerely,

Timothy Ready
Timothy Ready

I grant permission for my child to participate.

I do not grant permission for my child to participate.

321

NAME _____

PERIOD _____

TEACHER _____

1. Print your home address:

STREET # _____

CITY OR TOWN _____

2. Age:

- (1) 13
- (2) 14
- (3) 15
- (4) 16
- (5) 17
- (6) 18
- (7) 19

3. Sex

- (1) Male
- (2) Female

4. Ethnicity

- (1) Mexican-American or Chicano
- (2) Anglo-American, or American of European descent.
- (3) Black American
- (4) Other _____

5. Number of years that you have lived in the *Corpus Christi* area.

- (1) all my life
- (2) three years or less
- (3) more than three years, but not all my life.

IF YOU HAVE LIVED IN *Corpus Christi* ALL OF YOUR LIFE, THEN SKIP QUESTION # 6.

6. If you have not always lived in Robstown, list all other communities where you have lived, starting with the most recent. If outside of Texas, list the state, also.

7. What job or profession would you most like to have when you have finished your schooling? _____

8. On my report cards, I mostly get:

- (1) "A"s & "B"s
- (2) "B"s & "C"s
- (3) "C"s & "D"s
- (4) "D"s & "F"s

9. Parents' Marital Status:

- (1) Married and living together
- (2) Separated
- (3) Divorced
- (4) Widowed (one or both parents have died).

10. Do you live with:

- (1) Both of your parents.
- (2) One of your parents.
- (3) Neither of your parents. Please specify: _____.

11. How many people live in your household? _____.

12. State your father's occupation, or occupations, and briefly describe what he does. _____.

(If he does not now have a job, print "unemployed".)

13. State your mother's occupation or occupations, including housewife, and briefly describe what she does in any job she may have: _____.

14. Highest level of schooling completed by either parent:

- (1) Six years, or less.
- (2) Seven to eleven years
- (3) Twelve years or completion of high school.
- (4) Some training or college after high school.
- (5) A college degree.

15. Were either of your parents born outside of the United States?

- (1) Yes
- (2) No

16. If one or both of your parents were born outside of the United States, state what country: _____.

17. Marital status:

- (1) Single
- (2) Married

18. What language or languages do you speak to your parents?

- (1) English
- (2) Spanish
- (3) English and Spanish

19. What language or languages do you speak to your friends?

- (1) English
- (2) Spanish
- (3) English and Spanish

WORKSHEET --HEART UNIT

NAME
TEACHER
PERIOD
DATE

1.
YOUR PULSE (BEATS PER MINUTE)

TAKEN BY (STUDENT)

2. / / /
YOUR BLOOD PRESSURE YOUR BLOOD PRESSURE YOUR BLOOD PRESSURE

TAKEN BY (STUDENT)

3.
YOUR BLOOD PRESSURE YOUR BLOOD PRESSURE

TAKEN BY (TEACHER)

NAME
(PLEASE PRINT)

TEACHER

PERIOD

INSTRUCTIONS

In this test, you will read a series of statements. After each statement, there is a line with five different responses to that statement. Put an "X" on the line directly above the response which best represents how you feel. If you would like to add a written comment to better explain any of your answers, write that comment to the left of the line where you placed the "X".

EXAMPLE #1.

I feel that the freshmen have more school spirit than any other class.
This statement describes my feelings:

	VERY	FAIRLY	DON'T	NOT	NOT
	WELL	WELL	KNOW	VERY	AT
				WELL	ALL
I am a sophomore. sophomores have more spirit.					X

EXAMPLE #2.

I _____ enjoy going to high school football games.

			X		
	ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER
I am is playing					

325

1. In general, I _____ am interested in and can identify with what people are doing around me.

ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER

2. In general, I feel like I just don't "have it together". This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

3. I get very upset with myself when things do not go well for me. This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

4. In any given situation, I _____ feel like I know what to do.

ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER

5. In general, I feel that I am well liked by others. This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

6. I feel that _____ of what I am expected to do in this school is a waste of time.

ALL	MOST	SOME	LITTLE	NONE

7. I feel like I am just not "making it" in this school. This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

326

8. How well I do in school is _____ to me.

VERY	FAIRLY	SOMEWHAT	OF	NOT
IMPORTANT	IMPORTANT	IMPORTANT	LITTLE	IMPORTANT
			IMPORTANCE	

9. I _____ understand what to do and how to act in order to do well in school.

ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER

10. I _____ feel like I fit in and can relate well to people in this school.

ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER

11. I have trouble getting interested in or "getting into" what most of the kids my age do. This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

12. When I am around people my age, I _____ feel like they have "got it together" more than I do.

ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER

13. The companionship and respect of friends is _____ to me.

VERY	FAIRLY	SOMEWHAT	OF	NOT
IMPORTANT	IMPORTANT	IMPORTANT	LITTLE	IMPORTANT
			IMPORTANCE	

14. I feel that I understand other people my age, and they understand me. This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

327

15. There are few, if any, people who I can really consider to be my friends. This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

16. When I am around someone of the opposite sex, I _____ feel that I can act naturally and be myself.

ALWAYS	USUALLY	SOME TIMES	RARELY	NEVER

17. I _____ feel sure of myself when I am around someone of the opposite sex.

ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER

18. How I get along with members of the opposite sex is _____ to me.

VERY	FAIRLY	SOMEWHAT	OF	NOT
IMPORTANT	IMPORTANT	IMPORTANT	LITTLE	IMPORTANT
			IMPORTRANCE	

19. I _____ feel unsure of how to act when I am at parties, dances, outings, or dates with someone of the opposite sex.

ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER

20. I _____ feel left out and isolated when it comes to boy-girl relationships.

ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER

21. I agree with my parents about most things, and recognize that they usually know what is best for me. This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

328

22. I worry about whether I am a disappointment to my family. This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

23. It is _____ to me that I have the respect and support of my family.

VERY	FAIRLY	SOMEWHAT	OF	NOT
IMPORTANT	IMPORTANT	IMPORTANT	LITTLE	IMPORTANT
			IMPORTANCE	

24. I _____ understand what my parents want me to do.

ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER

25. I _____ get along well with my family.

ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER

The following questions have to do with any organized activities that you may participate in -- activities other than attending classes.

26. I currently belong to at least one club or team (from church, school, or elsewhere), or I have a job.

____ Yes
____ No

IF YOU ANSWERED YES TO #26, ANSWER QUESTIONS 27-36. IF YOU ANSWERED NO WAIT UNTIL WE GET TO QUESTION 37.

27. Name the activities that you are involved in. Write the activity that takes the greatest amount of your time first.

(a) _____
(b) _____
(c) _____

Questions 28-36 refer to the first activity (a) that you listed.

329

28. I feel that _____ of what I do in this activity is worthwhile.

ALL	MOST	SOME	LITTLE	NONE

29. I feel that I am not as good as what I do with my club, team or job as most other people. This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

30. Being good at this activity is _____ to me.

VERY	FAIRLY	SOMEWHAT	OF	NOT
IMPORTANT	IMPORTANT	IMPORTANT	LITTLE	IMPORTANT
			IMPORTANCE	

31. I _____ understand what I am supposed to do when I am involved with this activity.

ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER

32. I feel like I don't "fit in" with the other people on this club or team, or where I work. This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

33. I enjoy what I do when I am on the job, or with my team or club. This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

34. I feel that what I do on my job, or with my club or team, I do well. This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

35. They never clearly explained what I am supposed to do in this job, club, or team. This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

36. I get along well with the people where I work, or on my team or club. This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

37. The way that other people expect me to act is _____ the same as how I like to act.

ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER

38. I _____ feel confident and sure of myself.

ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER

39. I feel that I _____ understand why people act the way that they do in different situations.

ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER

40. I _____ feel comfortable and at ease when I am around other people.

ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER

41. I _____ feel that trying to learn what the teachers present to us in class is worthwhile.

ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER

331

42. From my point of view, I am doing as well in my school work as I need to do. This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

43. I _____ have trouble figuring out what it is that the teachers want me to do.

ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER

44. I am interested in many of the activities at this school, and feel that I am a part of what is going on here. This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

45. I don't feel comfortable doing the things that most kids my age like to do. This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

46. I _____ am nervous and unsure of myself when I am around other people my age.

ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER

47. It is _____ difficult for me to know what I have to do to get along with other kids my age.

ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER

48. I _____ feel alone and isolated, even among my friends.

ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER

332

49. It is hard for me to be myself, and act naturally when I am around someone of the opposite sex. This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

50. I _____ feel like I have "got it together" when I am around someone of the opposite sex.

ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER

51. I _____ feel like I know what to do and say when I am with someone of the opposite sex.

ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER

52. I feel that I am well liked by members of the opposite sex. This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

53. I feel that I cannot really be myself or act the way I want to when I am with my family. This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

54. I am confident that I will have at least as much success at what I do in life as others in my family have had. This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

55. One day my parents tell me to do one thing, and the next day they tell me to do something different. Lots of times I just don't know what they want me to do. This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

333

56. I feel very close to my parents. This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

57. I feel that the different parts of my life (e.g. family, friends, school) do not fit together very well. This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

58. There always seems to be something that keeps things from turning out right for me. This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

59. I have trouble finding enough hours in the day to do everything that I want to do. This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

60. I am an unusually nervous person. This statement describes my feelings:

VERY	FAIRLY	DON'T	NOT	NOT
WELL	WELL	KNOW	VERY	AT
			WELL	ALL

61. When something that you do does not turn out well, how often do you do each of the following:

- (A). I forget about the whole thing because it doesn't really matter anyway.

ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER

334

- (B) I do not worry too much about what went wrong, but try to do better in the future.

ALWAYS USUALLY SOMETIMES RARELY NEVER

- (C) I become frustrated and try to forget the whole thing, but I can't.

ALWAYS USUALLY SOMETIMES RARELY NEVER

- (D) I become angry, and try to take it out on someone else.

ALWAYS USUALLY SOMETIMES RARELY NEVER

b.p. #1 _____	wt. _____
b.p. #2 _____	m.b.p. _____
pulse _____	b.m.i. _____
ht. _____	

YOUR CARDIO-RISK SCORECARD

INSTRUCTIONS: There are many things which affect your chances of becoming ill with a disease of the heart or circulatory system. Some of those things you can control; some you cannot. Your Cardio-risk Scorecard is made up of a list of cardiovascular risk factors -- things that increase your chances of getting a heart attack or stroke.

It is true, of course, that these diseases rarely strike teenagers. Stroke and heart attack become more and more common, however, as a person gets older. By the age of thirty, cardiovascular disease is already the leading cause of death in our country.

Diseases of the heart and circulatory system usually take a long time to develop, and are greatly influenced by living habits established when you are young. Your Cardio-risk Scorecard can be a valuable tool that will help you to learn more about yourself, and what you can do to improve your chances of living a long and healthy life. It is not designed to be a medical diagnosis.

Your Cardio-risk Scorecard is divided into two parts:

Part I.: Risk factors which are beyond your control;

Part II: Risk factors related to the way you live.

For each of the risk factors that appears below, put an "X" through the response which best applies to you.

Example:

Smoking:

- (A) I have never smoked (0 points).
- ☒ (B) I used to smoke, but I quit (1 point).
- (C) I smoke less than 11 cigarettes/day, or a pipe or cigars (3 points).
- (D) I smoke 11 to 20 cigarettes/day (4 points).
- (E) I smoke 21 to 30 cigarettes/day (6 points).
- (F) I smoke over 30 cigarettes/day (8 points).

At the end of Part I, add up all of the points in that section. This will give you your "Baseline Score" -- an estimation of your cardiovascular risk due to factors that you have no control over. Then add up all of your points in Part II. This will give you an idea of how much of your cardiovascular risk is influenced by the way you live. A low score suggests that you may be less likely than others to develop cardiovascular disease. A high score in Part II suggests that there probably are steps that you could take to improve the health of your heart and circulatory system.

PART I: CARDIOVASCULAR RISK FACTORS WHICH ARE BEYOND YOUR CONTROL

Sex

- (A) Male (2 points). *
- (B) Female (1 point).

Do you have diabetes?

- (A) Yes (5 points)
- (B) No (1 point)

History of stroke or heart attack in immediate family (parents, brothers and sisters)

- (A) No one in my immediate family has suffered a stroke or heart attack (1 point).
- (B) One member of my immediate family has suffered a stroke or heart attack (4 points)
- (C) Two or more members of my immediate family have suffered a stroke or heart attack (8 points).

History of high blood pressure in immediate family (parents, brothers and sisters).

- (A) No one in my immediate family has high blood pressure (1 point).
- (B) One member of my immediate family has high blood pressure (2 points).
- (C) Two or more members of my immediate family have high blood pressure (5 points).

PART I TOTAL

Part II: CARDIOVASCULAR RISK FACTORS RELATED TO THE WAY YOU LIVE

Smoking:

- (A) I have never smoked (0 points).
- (B) I used to smoke, but I quit (1 point).
- (C) I smoke 10 cigarettes/day, or less, or a pipe or cigars (3 points).
- (D) I smoke 11 to 20 cigarettes/day (4 points).
- (E) I smoke 21 to 30 cigarettes/day (5 points).
- (F) I smoke over 30 cigarettes/day (6 points).

Exercise:

- (A) Daily vigorous exercise in work or recreation (e.g. football, track, or basketball, or a job requiring heavy manual labor). (0 points).
- (B) Moderate daily exercise (e.g. walking or bicycling at least one mile/day) (1 point).
- (C) Occasional exercise (once or twice/week) (3 points).
- (D) Seldom exercise (5 points).

Weight:

- (A) More than five pounds below standard weight (0 points).
- (B) Five pounds above or below standard weight (1 point).
- (C) Six to twenty pounds above standard weight (2 points).
- (D) 21-35 pounds overweight (3 points).
- (E) 36-50 pounds overweight (5 points).
- (F) More than fifty pounds overweight (7 points).

Stress:

"I consider myself to be a tense or nervous person."

This statement describes me:

- (A) Not at all (0 points).
- (B) Not very well (1 point).
- (C) Fairly well (3 points).
- (D) Very well (4 points).

Systolic Blood Pressure:

- (A) 100 mm., or less (0 points).
- (B) 101 to 120 mm. (1 point).
- (C) 121-129 mm. (2 points).
- (D) 130-139 mm. (3 points).
- (E) 140-149 mm. (4 points).
- (F) 150-159 mm. (5 points).
- (G) 160-169 mm. (6 points).

Diastolic Blood Pressure:

- (A) 60mm., or less. (0 points).
- (B) 61-80 mm. (1 point).
- (C) 81-85 mm. (2 points).
- (D) 86-90 mm. (3 points).
- (E) 91-95 mm. (4 points).
- (F) 96-100 mm. (5 points).
- (G) Over 100 mm. (6 points).

PART II TOTAL (Note -- Although all of the risk factors in Part II are influenced by the way you live, your weight and especially your blood pressure are also affected by biological factors over which we have no control.)

GRAND TOTAL SCORE -- THE SUM OF PARTS I & II.

*The points associated with each of the cardiovascular risk factors are not an exact estimation of cardiovascular risk. Rather, they will give you a rough idea of where you stand in relation to a number of things which are known to affect your chances of eventually developing a disease of the cardiovascular system.

APPENDIX 2

PRE-TEST OF THE DISTRIBUTION OF BLOOD PRESSURES AMONG CORPUS CHRISTI ADOLESCENTS, MAY, 1977

A pre-test was conducted in May of 1977 for the purpose of establishing the feasibility of conducting this social epidemiologic investigation of the blood pressures of adolescents in the Corpus Christi area. Two hundred seventy-two students at two schools were surveyed. Ninety-four of the students were from J.R. Allen High School. The remaining 178 attended Sam Houston High School. Permission to conduct this survey was requested of and granted by the two principals and several health teachers at the two schools. All students surveyed were enrolled in the required health courses at the time.

At each school, all students participating in the study were gathered into a large room. The purpose of the survey was then explained to the students by the investigator. Next, a questionnaire entitled "Survey of Blood Pressure Levels Among Adolescents of Corpus Christi" was distributed to each student. After being instructed not to write their names on the sheets, the students were asked to fill in the items regarding social and demographic characteristics. After this was done, two nurses from the Nueces County Public Health Department measured the height and weight (without shoes) of each student on a standard medical

scale. Each nurse, after measuring the height and weight of a student, would then ask the student to be seated and to rest his or her arm comfortably on a table. The nurse would then obtain two blood pressure measurements with a mercury sphygmomanometer. The mean of the student's two measurements was then used as that student's blood pressure. As is the case in the main study, only the systolic pressures are calculated. The findings of the pretest are presented in Tables 49 through 59 at the end of Appendix 2 and are summarized below.

Although tests of statistical significance were not performed, the pre-test revealed that the average systolic blood pressure of Mexican-American teenagers was higher than that of Anglos. Mexican-American youths also had a higher average body mass index (i.e. had heavier body builds) than Anglos. Youths who had always lived in Corpus Christi tended to have higher blood pressures than youths who had moved to the city within the last three years. Also, the pre-test revealed an inverse relationship between two measures of socioeconomic status (level of parental education and occupational status of parents) and systolic blood pressure. When Mexican-American and Anglo youths are examined separately, however, the apparent influence of socioeconomic status upon blood pressure is diminished. Finally, it should be noted that the systolic pressures of youths in this pre-test are considerably

higher than those reported in the main study. It is believed that the higher pressures in the pre-test are attributable to the less relaxed atmosphere in which the measurements were obtained.

SURVEY OF BLOOD PRESSURE LEVELS AMONG
ADOLESCENTS OF CORPUS CHRISTI

1. Has a doctor ever told you that you have high blood pressure?
 - (a) Yes
 - (b) No
2. Sex
 - (a) Male
 - (b) Female
3. Age (write your age) _____ years.
4. Ethnicity
 - (a) Mexican-American
 - (b) Anglo-American
 - (c) Black American
 - (d) Other
5. Number of years that you have lived in Corpus Christi (including recently annexed areas)
 - (a) All my life
 - (b) Three years or less
 - (c) More than three years but not all my life

IF YOUR ANSWER TO #5 IS (a), THEN SKIP QUESTION #6.

6. If you have not always lived in Corpus Christi, list all other communities where you have lived, starting with the most recent first (if outside of Texas, list the state, also). _____, _____
_____.
7. What job, occupation, or profession would you most like to have when you finish all your schooling?
_____.
8. On my report cards, I mostly get:
 - (a) "A"s & "B"s
 - (b) "B"s & "C"s
 - (c) "C"s & "D"s
 - (d) "D"s & "F"s
9. I live with:
 - (a) Both of my parents
 - (b) One of my parents
 - (c) Neither of my parents

10. Father's occupation: _____.
11. Mother's occupation: _____.
12. Highest level of schooling completed by either parent:
- (a) six years or less
 - (b) seven to eleven years
 - (c) twelve years or completion of high school
 - (d) some college or training after high school
 - (e) a college degree
13. Do either of your parents have high blood pressure?
- (a) yes
 - (b) no
 - (c) don't know
14. Were either of your parents born outside of the United States?
- (a) yes
 - (b) no
15. Have you taken any medication or drugs within the last 24 hours?
- (a) yes
 - (b) no
16. If you answered "yes" to number 15, list which medication or drug you took: _____.

b.p. 1. ____/____
b.p. 2. ____/____

mean b.p. ____/____

height _____

weight _____

Findings of the Pre-test

TABLE 49

SEX AND BLOOD PRESSURE (PRE-TEST)

	Males		Females	
	B.P.	N.	B.P.	N.
Mexican-American	125.1	29	117.1	27
Anglo	118.1	124	109.2	92
Total	119.5	153	110.9	119

TABLE 50

AGE AND BLOOD PRESSURE (PRE-TEST)

	14		15		16		17		18	
	B.P.	N.	B.P.	N.	B.P.	N.	B.P.	N.	B.P.	N.
Mexican-American	117.9	44	121.2	24	119.7	12	123.4	10	134.5	2
Anglo	109.7	36	114.6	92	116.8	53	112.5	19	118.5	11
Total	111.2	44	115.9	116	117.2	65	116.2	29	120.9	13

TABLE 51

GEOGRAPHIC MOBILITY AND BLOOD PRESSURE (PRE-TEST)

	All Life		3 Years		3 Years	
	B.P.	N.	B.P.	N.	B.P.	N.
Mexican-American	118.2	47	112.0	1	124.9	9
Anglo	115.7	107	112.9	22	112.7	83
Total	116.5	154	112.9	23	117.7	89

TABLE 52

ACADEMIC PERFORMANCE AND BLOOD PRESSURE (PRE-TEST)

	A&B		B&C		C&D		D&F	
	B.P.	N.	B.P.	N.	B.P.	N.	B.P.	N.
Mexican-Americans	118.1	8	120.6	20	123.5	22	118.3	3
Anglos	113.5	85	114.8	80	115.9	41	113.3	7
Total	113.9	93	115.9	100	118.6	63	114.8	10

TABLE 53

FAMILY STRUCTURE AND BLOOD PRESSURE (PRE-TEST)

	Two Parents		<Two Parents	
	B.P.	N.	B.P.	N.
Mexican-American	121.4	44	120.6	12
Anglo	114.2	187	115.1	29
Total	115.5	227	116.7	41

TABLE 54

OCCUPATIONAL STATUS AND BLOOD PRESSURE* (PRE-TEST)

	White Collar		Not White Collar	
	B.P.	N.	B.P.	N.
Mexican-American	119.0	5	121.5	51
Anglo	113.1	105	115.6	107
Total	113.4	110	117.3	158

*If either parent had a white collar occupation, the student was classified as being from a white collar family.

TABLE 55

PARENTAL EDUCATION AND BLOOD PRESSURE (PRE-TEST)

	<12 Years		12 Years		>12 Years	
	B.P.	N.	B.P.	N.	B.P.	N.
Mexican-Americans	122.7	33	118.9	8	115.8	7
Anglo	113.9	32	114.9	62	113.4	124
Total	118.3	65	115.4	70	113.6	121

TABLE 56

FAMILY HISTORY OF HYPERTENSION AND
BLOOD PRESSURE (PRE-TEST)

	Yes		No	
	B.P.	N.	B.P.	N.
Mexican-American	123.4	13	120.6	43
Anglo	113.6	41	114.4	171
Total	116.0	54	115.6	214

TABLE 57

FOREIGN BORN PARENT AND
BLOOD PRESSURE (PRE-TEST)

	Yes		No	
	B.P.	N.	B.P.	N.
Mexican-American	122.9	12	120.8	44
Anglo	116.6	10	114.1	202
Total	120.0	22	115.3	246

TABLE 58

BODY MASS INDEX (BMI) AND
ETHNICITY (PRE-TEST)

	BMI	N.
Mexican-American	.033	55
Anglo	.030	214
Total	.031	269

TABLE 59

BODY MASS INDEX (BMI) AND
SEX (PRE-TEST)

	Males		Females	
	BMI	N.	BMI	N.
Mexican-American	.033	28	.033	27
Anglo	.030	124	.030	90
Total	.031	152	.031	117

APPENDIX 3

BLOOD PRESSURE MEASUREMENT

The Influence of Cuff Size

All blood pressure measurements were made with standard "adult" sized cuffs, twenty-three centimeters long by thirteen centimeters in width. The fact that only one cuff size was used poses a problem for this investigation. Despite the fact that a blood pressure study of adolescents published in the Journal of Epidemiology only three years before the start of this investigation (Kotchen et al. 1974) used only the standard adult cuff, it became apparent to the researcher in the middle of the investigation that a number of adolescents with unusually large arms would have been more accurately measured with a larger cuff. The significance of cuff size as a cause of measurement error was demonstrated by Voors et al. in 1976. The standard adult size cuff tends to produce readings which are artificially high in persons with unusually large arms. According to Voor's criteria, persons whose upper arm length (acromium-olecranon distance) is at least thirty-two centimeters, and whose upper arm circumference at midpoint is at least thirty centimeters should be measured with an oversized blood pressure cuff. In the Corpus Christi study, the arm dimensions of 540 of the 899 students participating were

obtained. Of these 540, seventy-seven, or 14 percent would have been more accurately measured with the larger cuff.

When I discovered this problem, I consulted by telephone with Dr. Voors, and with Dr. Michael Stern, cardiovascular epidemiologist, of the University of Texas Health Science Center at San Antonio. Both Dr. Voors and Dr. Stern recommended that in order to assess the significance of the issue of cuff size upon the blood pressure measurements in this study, a sample of the students with large arms should be remeasured; once with the standard sized cuff, and also with the oversized cuff. On the basis of these measurements, a regression equation could be produced that would predict what a subject's blood pressure would be if he or she had been measured with an over-sized cuff.

Thirty-nine students at Sam Houston and Laguna High Schools were remeasured after the main fieldwork for this study had been completed. All of these students, according to the Voors criteria, would have been more accurately measured by the oversized cuff. Each of the thirty-nine students was measured once with the standard sized cuff and once with the oversized cuff. Twenty students were measured first with the standard sized cuff, and nineteen were measured first with the oversized cuff. This was done to minimize the possible influence of the order of measurement upon the readings. The regression analysis produced

the following equation predicting the amount of error in measurement attributable to cuff size:

$$Y = 52.1 + .56X$$

Y = the dependent variable (oversized cuff prediction).
X = the standard sized cuff reading.

The following table illustrates the amount of difference in measurement attributable to cuff size at specified systolic pressures obtained with the standard sized cuff.

TABLE 60

PREDICTED SYSTOLIC PRESSURES ON AN OVERSIZED CUFF
BASED ON MEASUREMENTS WITH A STANDARD SIZED
CUFF FOR SUBJECTS WITH LARGE ARMS

Predicted Systolic Pressure With Oversized Cuff	Systolic Pressure Measured With Standard Sized Cuff
113.8	110
118.4	120
125.0	130
130.6	140
136.3	150
141.9	160

The difference in systolic pressures between the two cuffs, as predicted by the regression equation, is no more than 5 mm. Hg. for pressures of 130 mm. Hg. or less, as measured by the standard cuff. Only 4 percent of all subjects in the study had a systolic pressure of 130 mm. Hg or greater.

To further investigate the influence of cuff size on the findings of this study, the distribution of corrected systolic pressures by the major social and economic variables in this study was calculated for students whose upper arm dimensions were known. The distribution of uncorrected systolic pressures by the same social and demographic variables for the same subset of the population with known upper arm dimensions was also calculated for purposes of comparison. The pattern of distribution of systolic pressures by these social and demographic variables in these two analyses is basically unchanged from that reported in Chapter 4.

TABLE 61

SEX AND BLOOD PRESSURE: STANDARD AND OVERSIZED CUFF

UNCOMPENSATED SYSTOLIC PRESSURE				COMPENSATED SYSTOLIC PRESSURE		
B.P.	S.D.	N.		B.P.	S.D.	N.
111.2	11.3	213	MALE	111.2	10.4	214
107.3	10.9	207	FEMALE	107.4	10.7	207
(F = 13.1 p < .01)				(F = 13.0 p < .01)		

TABLE 62

ETHNICITY AND BLOOD PRESSURE:
STANDARD AND OVERSIZED CUFFS

UNCOMPENSATED SYSTOLIC PRESSURE				COMPENSATED SYSTOLIC PRESSURE		
B.P.	S.D.	N.		B.P.	S.D.	N.
111.1	11.2	234	MEX-AM	110.9	10.5	234
105.6	10.4	157	ANGLO	106.1	10.2	157
114.1	11.1	27	BLACK	114.1	11.1	27
115.7	2.3	3	OTHER	115.9	2.5	3
(F = 102 p < .01)				(F = 9.0 p < .01)		

TABLE 63

GEOGRAPHIC MOBILITY AND BLOOD PRESSURE:
STANDARD AND OVERSIZED CUFFS

UNCOMPENSATED SYSTOLIC PRESSURE				COMPENSATED SYSTOLIC PRESSURE		
B.P.	S.D.	N.		B.P.	S.D.	N.
110.6	11.1	247	ALL LIFE	110.6	10.4	247
104.2	10.7	48	< 3 YEARS	104.4	10.7	48
108.3	10.8	119	> 3 YEARS	108.4	10.5	119
(F = 10.2 p < .01)				(F = 9.0 p < .01)		

TABLE 64

FAMILY HISTORY OF HYPERTENSION AND BLOOD PRESSURE:
STANDARD AND OVERSIZED CUFFS

UNCOMPENSATED SYSTOLIC PRESSURE				COMPENSATED SYSTOLIC PRESSURE		
B.P.	S.D.	N.		B.P.	S.D.	N.
108.7	11.3	281	NO ONE	108.8	10.9	281
110.0	10.4	138	ONE PERSON	110.0	9.7	138
113.2	12.4	25	TWO PEOPLE	112.6	11.2	25
(F = 2.3 p = n.s.)				(F = 1.93 p = n.s.)		

Interobserver Reliability

Another question regarding the reliability of blood pressure measurements is the issue of interobserver variability. Five persons took blood pressure measurements. Two were nurse practitioners specially trained in cardiology (called Pediatric Cardiology Associates, or PCS's). Two were medical students temporarily working with the Children's Heart Institute and who regularly measured blood pressures in a clinical setting. The fifth person was an anthropologist, who was trained by a physician working at the Children's Heart Institute. The interobserver reliability of measurements by the five observers was established at the start of the study by having each observer measure the pressures of several persons. The blood pressure readings by each observer were compared, and found to be very close.

Despite this initial check of interobserver reliability, significant differences in the average of the blood pressures obtained by each observer were found. There is reason to believe, however, that these differences are primarily due to the fact that the observers measured different populations.

For example, the anthropologist obtained most of his blood pressure observations at Sam Houston High School. The average of the blood pressure measurements of the anthropologist was significantly lower than that of the other four observers. In the pretest for this study conducted at two Corpus Christi high schools, one of which was Sam Houston, the average blood pressure at Sam Houston was found to be much lower than that of the other school. Also, essentially the same statistical relationships between blood pressure and social and demographic variables were found in the pretest as were found in this investigation. All blood pressure observations during the pretest were made by two nurses who did not participate in the main study. Therefore, it is reasonable to assume that most of the differences between blood pressure observers are explained by real differences in the blood pressures of the populations that were measured. Since the pretest and the main investigation produced essentially similar findings, any variability attributable to interobserver differences in a measurement technique probably did not greatly influence the findings of this study.

APPENDIX 4

MEAN RESPONSES OF ETHNIC AND LANGUAGE GROUPS TO THE PSYCHOSOCIAL ADAPTATION INSTRUMENT (PSAI)

The mean responses of ethnic and language groups to PSAI items are presented below. T-tests were conducted in order to test for significant differences between: Mexican-Americans and Anglos; Anglos and Blacks, and; Spanish-speaking Mexican-Americans and English-speaking Mexican-Americans. In this appendix, the groups are abbreviated as follows:

Mexican-American = MA

Anglo-American = AA

English-speaking Mexican-American = MAES

Spanish-speaking Mexican-American = MASS

1. In general, I _____ am interested in and can identify with what people are doing around me.

	(5)	(4)	(3)	(2)	(1)	
	ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER	
			MA	AA	BL	MASS MAES
MEAN			3.39	3.71	3.17	3.35 3.53
S.D.			0.85	0.63	1.12	0.83 0.77
T-TEST MA-AA			(t = -5.66	p < .01)		
T-TEST AA-BL			(t = 3.87	p < .05)		
T-TEST MASS-MAES			(t = -1.74	p = n.s.)		

2. In general, I feel like I just don't "have it together." This statement describes my feelings:

	(1)	(2)	(3)	(4)	(5)	
	VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL	
			MA	AA	BL	MASS MAES
MEAN			3.29	3.70	3.35	3.27 3.44
S.D.			1.12	1.08	1.22	1.09 1.20
T-TEST MA-AA			(t = -4.72	p < .01)		
T-TEST AA-BL			(t = 1.60	p = n.s.)		
T-TEST MASS-MAES			(t = 1.16	p = n.s.)		

3. I get very upset with myself when things do not go well for me. This statement describes my feelings:

	(1)	(2)	(3)	(4)	(5)	
	VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL	
			MA	AA	BL	MASS MAES
MEAN			2.49	2.51	2.86	2.40 2.51
S.D.			1.25	1.22	1.32	1.25 1.14
T-TEST MA-AA			(t = -0.29	p = n.s.)		
T-TEST AA-BL			(t = -1.40	p = n.s.)		
T-TEST MASS-MAES			(t = -0.64	p = n.s.)		

4. In any given situation, I _____ feel like I know what to do.

(5)	(4)	(3)	(2)	(1)		
ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER		
		MA	AA	BL	MASS	MAES
MEAN		3.49	3.64	3.71	3.49	3.44
S.D.		0.74	0.56	0.98	0.76	0.66
T-TEST	MA-AA	(t = -3.31 p < .01)				
T-TEST	AA-BL	(t = -0.37 p = n.s.)				
T-TEST	MASS-MAES	(t = 0.53 p = n.s.)				

5. In general, I feel that I am well liked by others.
This statement describes my feelings:

(5)	(4)	(3)	(2)	(1)		
VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL		
		MA	AA	BL	MASS	MAES
MEAN		3.47	3.68	3.93	3.47	3.74
S.D.		0.86	0.77	1.02	0.84	0.78
T-TEST	MA-AA	(t = -3.17	p < .01)			
T-TEST	AA-BL	(t = -1.28	p = n.s.)			
T-TEST	MASS-MAES	(t = -2.54	p < .05)			

6. I feel that _____ of what I am expected to do in this school is a waste of time.

(1)	(2)	(3)	(4)	(5)		
ALL	MOST	SOME	LITTLE	NONE		
		MA	AA	BL	MASS	MAES
MEAN		3.83	3.68	3.46	3.86	3.93
S.D.		1.04	0.93	1.26	1.03	1.00
T-TEST	MA-AA	(t = 1.82		p = n.s.)		
T-TEST	AA-BL	(t = 0.89		p = n.s.)		
T-TEST	MASS-MAES	(t = -0.57		p = n.s.)		

7. I feel like I am just not "making it" in this school.
This statement describes my feelings:

(1)	(2)	(3)	(4)	(5)		
VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL		
		MA	AA	BL	MASS	MAES
MEAN		3.59	3.92	3.82	3.54	3.90
S.D.		1.23	1.19	1.44	1.20	1.28
T-TEST	MA-AA	(t = -3.45 p < .01)				
T-TEST	AA-BL	(t = 0.42 p = n.s.)				
T-TEST	MASS-MAES	(t = -2.23 p < .05)				

8. How well I do in school is _____ to me.

	(5)	(4)	(3)	(2)	(1)		
	VERY IMPORTANT	FAIRLY IMPORTANT	SOMEWHAT IMPORTANT	OF LITTLE IMPORTANCE	NOT IMPORTANT		
			MA	AA	BL	MASS	MAES
MEAN			4.53	4.57	4.68	4.56	4.72
S.D.			0.82	0.67	0.86	0.77	0.56
T-TEST	MA-AA		(t = -0.77	p = n.s.)			
T-TEST	AA-BL		(t = -0.62	p = n.s.)			
T-TEST	MASS-MAES		(t = -2.07	p < .05)			

9. I _____ understand what to do and how to act in
order to do well in school.

(5)	(4)	(3)	(2)	(1)		
ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER		
		MA	AA	BL	MASS	MAES
MEAN		3.77	3.99	4.25	3.73	3.92
S.D.		0.79	0.57	0.97	0.80	0.76
T-TEST	MA-AA	(t = -4.29		p < .01)		
T-TEST	AA-BL	(t = -1.39		p = n.s.)		
T-TEST	MASS-MAES	(t = -1.87		p = n.s.)		

10. I _____ feel like I fit in and can relate well to people in this school.

(5)	(4)	(3)	(2)	(1)		
ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER		
		MA	AA	BL	MASS	MAES
MEAN		3.47	3.65	4.25	3.45	3.56
S.D.		0.85	0.72	0.97	0.83	0.80
T-TEST	MA-AA	(t = -2.89 p < .01)				
T-TEST	AA-BL	(t = -1.39 p = n.s.)				
T-TEST	MASS-MAES	(t = -1.03 p = n.s.)				

11. I have trouble getting interested in or "getting into" what most of the kids my age do. This statement describes my feelings:

(1)	(2)	(3)	(4)	(5)		
VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL		
		MA	AA	BL	MASS	MAES
MEAN		3.21	3.65	3.14	3.10	1.20
S.D.		1.20	1.21	1.46	3.52	1.15
T-TEST	MA-AA	(t = -4.61		p < .01)		
T-TEST	AA-BL	(t = 2.06		p < .05)		
T-TEST	MASS-MAES	(t = 02.75		p < .01)		

12. When I am around people my age, I _____ feel like they have "got it together" more than I do.

(1)	(2)	(3)	(4)	(5)		
ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER		
		MA	AA	BL	MASS	MAES
MEAN		3.19	3.34	3.68	3.20	3.31
S.D.		1.01	0.88	1.12	1.03	0.86
T-TEST	MA-AA	(t = -2.06		p < .05)		
T-TEST	AA-BL	(t = -1.85		p < .01)		
T-TEST	MASS-MAES					

13. The companionship and respect of friends is _____
to me.

	(5)	(4)	(3)	(2)	(1)
	VERY IMPORTANT	FAIRLY IMPORTANT	SOMEWHAT IMPORTANT	OF LITTLE IMPORTANCE	NOT IMPORTANT
	MA	AA	BL	MASS	MAES
MEAN	4.36	4.70	4.00	4.36	4.63
S.D.	0.96	0.62	1.30	0.93	0.71
T-TEST MA-AA	(t = -5.39		p < .01)		
T-TEST AA-BL	(t = 2.79		p < .01)		
T-TEST MASS-MAES	(t = -2.77		p < .01)		

14. I feel that I understand other people my age, and they understand me. This statement describes my feelings:

	(5)	(4)	(3)	(2)	(1)
	VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL
	MA	AA	BL	MASS	MAES
MEAN	3.75	3.93	3.75	3.73	3.87
S.D.	0.99	0.85	1.35	1.00	0.91
T-TEST MA-AA	(t = -2.51		p < .05)		
T-TEST AA-BL	(t = 0.70		p = n.s.)		
T-TEST MASS-MAES	(t = -1.12		p = n.s.)		

15. There are few, if any, people who I can really consider to be my friends. This statement describes my feelings:

	(1)	(2)	(3)	(4)	(5)
	VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL
	MA	AA	BL	MASS	MAES
MEAN	2.73	3.54	2.11	2.61	3.19
S.D.	1.29	1.37	1.31	1.22	1.40
T-TEST MA-AA	(t = -7.65		p < .01)		
T-TEST AA-BL	(t = 5.27		p < .01)		
T-TEST MASS-MAES	(t = -3.58		p < .01)		

16. When I am around someone of the opposite sex, I
 _____ feel that I can act naturally and be
 myself.

(5)	(4)	(3)	(2)	(1)		
ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER		
		MA	AA	BL	MASS	MAES
MEAN		3.83	3.83	4.41	3.84	3.80
S.D.		1.06	0.92	0.80	1.05	0.90
T-TEST	MA-AA	(t = -0.03		p = n.s.)		
T-TEST	AA-BL	(t = -3.15		p < .01)		
T-TEST	MASS-MAES	(t = 0.30		p = n.s.)		

17. I _____ feel sure of myself when I am around
 someone of the opposite sex.

(5)	(4)	(3)	(2)	(1)		
ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER		
		MA	AA	BL	MASS	MAES
MEAN		3.74	3.72	4.29	3.71	3.63
S.D.		0.93	0.74	0.71	0.94	0.84
T-TEST	MA-AA	(t = 0.22		p = n.s.)		
T-TEST	AA-BL	(t = -3.80		p < .01)		
T-TEST	MASS-MAES	(t = 0.64		p = n.s.)		

18. How I get along with members of the opposite sex is
 _____ to me.

(5)	(4)	(3)	(2)	(1)		
VERY IMPORTANT	FAIRLY IMPORTANT	SOMEWHAT IMPORTANT	OF LITTLE IMPORTANCE	NOT IMPORTANT		
		MA	AA	BL	MASS	MAES
MEAN		4.29	4.54	4.46	4.27	4.38
S.D.		0.97	0.73	1.17	0.96	0.92
T-TEST	MA-AA	(t = -3.75		p < .01)		
T-TEST	AA-BL	(t = 0.34		p = n.s.)		
T-TEST	MASS-MAES	(t = -0.87		p = n.s.)		

19. I _____ feel unsure of how to act when I am at parties, dances, outings, or dates with someone of the opposite sex.

(1)	(2)	(3)	(4)	(5)		
ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER		
		MA	AA	BL	MASS	MAES
MEAN		2.99	3.36	3.42	3.04	3.12
S.D.		1.22	0.92	1.57	1.19	1.21
T-TEST	MA-AA	(t = -4.40 p < .01)				
T-TEST	AA-BL	(t = -0.23 p = n.s.)				
T-TEST	MASS-MAES	(t = -0.48 p = n.s.)				

20. I _____ feel left out and isolated when it comes to boy-girl relationships.

(1)	(2)	(3)	(4)	(5)		
ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER		
		MA	AA	BL	MASS	MAES
MEAN		3.56	3.64	4.18	3.57	3.67
S.D.		1.21	0.96	0.94	1.12	1.06
T-TEST	MA-AA	(t = -1.06 p = n.s.)				
T-TEST	AA-BL	(t = -2.80 p < .01)				
T-TEST	MASS-MAES	(t = 0.73 p = n.s.)				

21. I agree with my parents about most things, and recognize that they usually know what is best for me. This statement describes my feelings:

(5)	(4)	(3)	(2)	(1)		
VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL		
		MA	AA	BL	MASS	MAES
MEAN		3.98	3.67	4.18	3.98	4.04
S.D.		1.08	1.15	0.90	1.09	1.07
T-TEST	MA-AA	(t = 3.44	p < .01)			
T-TEST	AA-BL	(t = -2.18	p < .05)			
T-TEST	MASS-MAES	(t = -0.41	p = n.s.)			

22. I worry about whether I am a disappointment to my family. This statement describes my feelings:

(1)	(2)	(3)	(4)	(5)		
VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL		
		MA	AA	BL	MASS	MAES
MEAN		2.89	3.37	3.04	2.82	3.12
S.D.		1.38	1.39	1.48	1.36	1.48
T-TEST	MA-AA	(t = -4.34		p < .01)		
T-TEST	AA-BL	(t = 1.20		p = n.s.)		
T-TEST	MASS-MAES	(t = -1.60		p = n.s.)		

23. It is _____ to me that I have the respect and support of my family.

(5)	(4)	(3)	(2)	(1)		
VERY IMPORTANT	FAIRLY IMPORTANT	SOMEWHAT IMPORTANT	OF LITTLE IMPORTANCE	NOT IMPORTANT		
		MA	AA	BL	MASS	MAES
MEAN		4.69	4.50	4.68	4.70	4.70
S.D.		0.63	0.77	0.77	0.59	0.65
T-TEST MA-AA		(t = 3.16	p < .01)			
T-TEST AA-BL		(t = -1.12	p = n.s.)			
T-TEST MASS-MAES		(t = 0.04	p = n.s.)			

24. I _____ understand what my parents want me to do.

(5)	(4)	(3)	(2)	(1)		
ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER		
		MA	AA	BL	MASS	MAES
MEAN		4.07	3.86	3.95	4.12	3.99
S.D.		0.75	0.77	0.90	0.73	0.77
T-TEST MA-AA		(t - 3.35	p < .01)			
T-TEST AA-BL		(t = -0.41	p = n.s.)			
T-TEST MASS-MAES		(t = 1.37	p = n.s.)			

25. I _____ get along well with my family.

(5)	(4)	(3)	(2)	(1)		
ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER		
		MA	AA	BL	MASS	MAES
MEAN		3.86	3.76	3.86	3.88	3.92
S.D.		0.86	0.85	0.89	0.82	0.87
T-TEST	MA-AA	(t = 1.35	p = n.s.)			
T-TEST	AA-BL	(t = -0.54	p = n.s.)			
T-TEST	MASS-MAES	(t = -0.40	p = n.s.)			

The following questions have to do with any organized activities that you may participate in -- activities other than attending classes.

26. I currently belong to at least one club or team (from church, school, or elsewhere), or I have a job.

_____ Yes (1)
 _____ No (2)

	MA	AA	BL	MASS	MAES
MEAN	1.42	1.19	1.29	1.44	1.34
S.D.	0.49	0.39	0.46	0.50	0.48
T-TEST MA-AA	(t = 6.66		p < .01)		
T-TEST AA-BL	(t = -1.22		p = n.s.)		
T-TEST MASS-MAES	(t = 1.59		p = n.s.)		

IF YOU ANSWERED YES to #26, ANSWER QUESTIONS 27-36. IF YOU ANSWERED NO WAIT UNTIL WE GET TO QUESTION 37.

27. Name the activities that you are involved in. Write the activity that takes the greatest amount of your time first.

(a) _____
 (b) _____
 (c) _____

Questions 28-36 refer to the first activity (a) that you listed.

28. I feel that _____ of what I do in this activity is worthwhile.

(5)	(4)	(3)	(2)	(1)		
ALL	MOST	SOME	LITTLE	NONE		
		MA	AA	BL	MASS	MAES
MEAN		4.36	4.40	4.23	4.36	4.30
S.D.		0.83	0.72	0.97	0.84	0.86
T-TEST	MA-AA	(t = -0.64		p = n.s.)		
T-TEST	AA-BL	(t = 0.91		p = n.s.)		
T-TEST	MASS-MAES	(t = 0.40		p = n.s.)		

29. I feel that I am not as good at what I do with my club, team or job as most other people. This statement describes my feelings:

(1)	(2)	(3)	(4)	(5)		
VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL		
		MA	AA	BL	MASS	MAES
MEAN		3.38	3.73	3.23	3.42	3.51
S.D.		1.20	1.17	1.48	1.19	1.16
T-TEST	MA-AA	(t = -3.07		p < .01)		
T-TEST	AA-BL	(t = 1.64		p = n.s.)		
T-TEST	MASS-MAES	(t = -0.44		p = n.s.)		

30. Being good at this activity is _____ to me.

(5)	(4)	(3)	(2)	(1)		
VERY IMPORTANT	FAIRLY IMPORTANT	SOMEWHAT IMPORTANT	OF LITTLE IMPORTANCE	NOT IMPORTANT		
		MA	AA	BL	MASS	MAES
MEAN		4.53	4.51	4.47	4.50	4.46
S.D.		0.77	0.69	1.07	0.76	0.86
T-TEST	MA-AA	(t = 0.33		p = n.s.)		
T-TEST	AA-BL	(t = 0.14		p = n.s.)		
T-TEST	MASS-MAES	(t = 0.31		p = n.s.)		

31. I _____ understand what I am supposed to do when I am involved with this activity.

(5)	(4)	(3)	(2)	(1)		
ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER		
		MA	AA	BL	MASS	MAES
MEAN		4.26	4.35	4.41	4.25	4.36
S.D.		0.67	0.54	0.62	0.69	0.48
T-TEST	MA-AA	(t = -1.57		p = n.s.)		
T-TEST	AA-BL	(t = -0.44		p = n.s.)		
T-TEST	MASS-MAES	(t = -1.26		p = n.s.)		

32. I feel like I don't "fit in" with the other people on this club or team, or where I work. This statement describes my feelings:

(1)	(2)	(3)	(4)	(5)		
VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL		
		MA	AA	BL	MASS	MAES
MEAN		3.74	4.21	3.70	3.72	4.08
S.D.		1.30	1.02	1.49	1.32	1.08
T-TEST	MA-AA	(t = -4.29		p < .01)		
T-TEST	AA-BL	(t = 1.37		p = n.s.)		
T-TEST	MASS-MAES	(t = -1.75		p = n.s.)		

33. I enjoy what I do when I am on the job, or with my team or club. This statement describes my feelings:

(5)	(4)	(3)	(2)	(1)		
VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL		
		MA	AA	BL	MASS	MAES
MEAN		4.41	4.48	4.58	4.38	4.50
S.D.		0.78	0.78	0.62	0.82	0.67
T-TEST	MA-AA	(t = -0.91		p = n.s.)		
T-TEST	AA-BL	(t = -0.54		p = n.s.)		
T-TEST	MASS-MAES	(t = -0.91		p = n.s.)		

34. I feel that what I do on my job, or with my club or team, I do well. This statement describes my feelings:

(5)	(4)	(3)	(2)	(1)		
VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL		
		MA	AA	BL	MASS	MAES
MEAN		4.09	4.17	4.53	4.15	4.12
S.D.		0.17	0.63	0.62	0.65	0.63
T-TEST	MA-AA	(t = 01.13		p = n.s.)		
T-TEST	AA-BL	(t = -2.30		p = n.s.)		
T-TEST	MASS-MAES	(t = 0.27		p = n.s.)		

35. They never clearly explained what I am supposed to do in this job, club, or team. This statement describes my feelings:

(1)	(2)	(3)	(4)	(5)		
VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL		
		MA	AA	BL	MASS	MAES
MEAN		3.68	4.27	3.06	3.66	4.24
S.D.		1.31	1.08	1.43	1.36	0.89
T-TEST	MA-AA	(t = -5.15		p < .01)		
T-TEST	AA-BL	(t = 4.31		p < .01)		
T-TEST	MASS-MAES	(t = -3.46		p < .01)		

36. I get along well with the people where I work, or on my team or club. This statement describes my feelings:

(5)	(4)	(3)	(2)	(1)		
VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL		
		MA	AA	BL	MASS	MAES
MEAN		4.25	4.37	4.59	4.23	4.22
S.D.		0.88	0.79	0.51	0.91	0.89
T-TEST	MA-AA	(t = -1.48		p = n.s.)		
T-TEST	AA-BL	(t = -1.60		p = n.s.)		
T-TEST	MASS-MAES	(t = 0.06		p = n.s.)		

37. The way that other people expect me to act is _____
the same as how I like to act.

(5)	(4)	(3)	(2)	(1)		
ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER		
		MA	AA	BL	MASS	MAES
MEAN		3.53	3.55	3.44	3.50	3.52
S.D.		1.00	0.81	1.09	1.03	0.91
T-TEST	MA-AA	(t = -0.37		p = n.s.)		
T-TEST	AA-BL	(t = 0.51		p = n.s.)		
T-TEST	MASS-MAES	(t = -0.15		p = n.s.)		

38. I _____ feel confident and sure of myself.

(5)	(4)	(3)	(2)	(1)		
ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER		
		MA	AA	BL	MASS	MAES
MEAN		3.76	3.81	4.18	3.76	3.63
S.D.		0.79	0.63	0.67	0.79	0.73
T-TEST	MA-AA	(t = -0.92		p = n.s.)		
T-TEST	AA-BL	(t = -2.91		p < .01)		
T-TEST	MASS-MAES	(t = 1.23		p = n.s.)		

39. I feel that I _____ understand why people act the
way that they do in different situations.

(5)	(4)	(3)	(2)	(1)		
ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER		
		MA	AA	BL	MASS	MAES
MEAN		3.44	3.55	2.93	3.46	3.58
S.D.		0.93	0.69	1.36	0.93	0.73
T-TEST	MA-AA	(t = -1.79		p = n.s.)		
T-TEST	AA-BL	(t = 2.36		p < .05)		
T-TEST	MASS-MAES	(t = -1.19		p = n.s.)		

40. I _____ feel comfortable and at east when I am around other people.

(5)	(4)	(3)	(2)	(1)		
ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER		
		MA	AA	BL	MASS	MAES
MEAN		3.61	3.74	3.28	3.55	3.82
S.D.		0.82	0.69	0.85	0.86	0.71
T-TEST	MA-AA	(t = -2.16		p < .05)		
T-TEST	AA-BL	(t = 3.24		p < .01)		
T-TEST	MASS-MAES	(t = -2.69		p < .01)		

41. I _____ feel that trying to learn what the teachers present to us in class is worthwhile.

(5)	(4)	(3)	(2)	(1)		
ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER		
		MA	AA	BL	MASS	MAES
MEAN		3.99	3.75	4.39	4.04	3.89
S.D.		0.85	0.76	0.74	0.82	0.90
T-TEST	MA-AA	(t = 3.69		p < .01)		
T-TEST	AA-BL	(t = -4.23		p < .01)		
T-TEST	MASS-MAES	(t = 1.31		p = n.s.)		

42. From my point of view, I am doing as well in my school work as I need to do. This statement describes my feelings:

(5)	(4)	(3)	(2)	(1)		
VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL		
		MA	AA	BL	MASS	MAES
MEAN		3.18	3.08	3.79	3.24	3.00
S.D.		1.15	1.23	1.03	1.16	1.20
T-TEST	MA-AA	(t = 1.08	p = n.s.)			
T-TEST	AA-BL	(t = -2.91	p < .01)			
T-TEST	MASS-MAES	(t = 1.64	p = n.s.)			

43. I _____ have trouble figuring out what it is that the teachers want me to do.

(1)	(2)	(3)	(4)	(5)		
ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER		
		MA	AA	BL	MASS	MAES
MEAN		3.26	3.46	3.46	3.25	3.43
S.D.		0.82	0.75	0.88	0.82	0.75
T-TEST	MA-AA	(t = -3.12		p < .01)		
T-TEST	AA-BL	(t = -0.03		p = n.s.)		
T-TEST	MASS-MAES	t = -1.74		p = n.s.)		

44. I am interested in many of the activities at this school, and feel that I am a part of what is going on here. This statement describes my feelings:

(5)	(4)	(3)	(2)	(1)		
VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL		
		MA	AA	BL	MASS	MAES
MEAN		3.10	3.09	3.57	3.05	3.20
S.D.		1.45	1.18	1.42	1.72	1.07
T-TEST	MA-AA	(t = 0.12		p = n.s.)		
T-TEST	AA-BL	(t = -1.99		p < .05)		
T-TEST	MASS-MAES	(t = -0.96		p = n.s.)		

45. I don't feel comfortable doing the things that most kids my age like to do. This statement describes my feelings:

(1)	(2)	(3)	(4)	(5)		
VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL		
		MA	AA	BL	MASS	MAES
MEAN		3.31	3.56	2.96	3.36	3.59
S.D.		1.18	1.19	1.40	1.16	1.17
T-TEST	MA-AA	(t = -2.60		p < .01)		
T-TEST	AA-BL	(t = 2.49		p < .05)		
T-TEST	MASS-MAES	(t = -1.76		p = n.s.)		

46. I _____ am nervous and unsure of myself when I am around other people my age.

(1)	(2)	(3)	(4)	(5)		
ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER		
		MA	AA	BL	MASS	MAES
MEAN		3.74	3.80	4.11	3.74	3.75
S.D.		0.97	0.72	1.03	0.95	0.82
T-TEST	MA-AA	(t = -1.03		p = n.s.)		
T-TEST	AA-BL	(t = -1.52		p = n.s.)		
T-TEST	MASS-MAES	(t = -0.08		p = n.s.)		

47. It is _____ difficult for me to know what I have to do to get along with other kids my age.

(1)	(2)	(3)	(4)	(5)		
ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER		
		MA	AA	BL	MASS	MAES
MEAN		3.52	3.69	3.68	3.50	3.71
S.D.		1.01	0.80	1.33	0.99	0.95
T-TEST	MA-AA	(t = -2.39		p < .05)		
T-TEST	AA-BL	(t = 0.04		p = n.s.)		
T-TEST	MASS-MAES	(t = -1.64		p = n.s.)		

48. I _____ feel alone and isolated, even among my friends.

(1)	(2)	(3)	(4)	(5)		
ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER		
		MA	AA	BL	MASS	MAES
MEAN		3.69	3.93	3.89	3.71	3.72
S.D.		1.01	0.85	1.45	0.98	0.87
T-TEST	MA-AA	(t = -3.04		p < .01)		
T-TEST	AA-BL	(t = 0.12		p = n.s.)		
T-TEST	MASS-MAES	(t = -0.07		p = n.s.)		

49. It is hard for me to be myself, and act naturally when I am around someone of the opposite sex. This statement describes my feelings:

(1)	(2)	(3)	(4)	(5)		
VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL		
		MA	AA	BL	MASS	MAES
MEAN		3.47	3.77	3.79	3.42	3.63
S.D.		1.19	1.03	1.40	1.20	1.03
T-TEST	MA-AA	(t = -3.47		p < .01)		
T-TEST	AA-BL	(t = -0.05		p = n.s.)		
T-TEST	MASS-MAES	(t = -1.41		p = n.s.)		

50. I _____ feel like I have "got it together" when I am around someone of the opposite sex.

(5)	(4)	(3)	(2)	(1)		
ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER		
		MA	AA	BL	MASS	MAES
MEAN		3.42	3.56	4.00	3.34	3.51
S.D.		0.88	0.78	1.22	0.91	0.76
T-TEST	MA-AA	(t = -2.17		p < .05)		
T-TEST	AA-BL	(t = -2.01		p = n.s.)		
T-TEST	MASS-MAES	t = -1.50		p = n.s.)		

51. I _____ feel like I know what to do and say when I am with someone of the opposite sex.

(5)	(4)	(3)	(2)	(1)		
ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER		
		MA	AA	BL	MASS	MAES
MEAN		3.43	3.68	4.04	3.53	3.45
S.D.		0.91	0.71	1.07	0.81	0.79
T-TEST	MA-AA	(t = -3.84		p < .01)		
T-TEST	AA-BL	(t = -1.72		p = n.s.)		
T-TEST	MASS-MAES	(t = -0.80		p = n.s.)		

52. I feel that I am well liked by members of the opposite sex. This statement describes my feelings:

	(5)	(4)	(3)	(2)	(1)	
	VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL	
			MA	AA	BL	MASS MAES
MEAN			3.52	3.50	4.00	3.34 3.88
S.D.			0.80	0.76	0.86	1.27 1.23
T-TEST MA-AA			(t = -.37		p = n.s.)	
T-TEST AA-BL			(t = -3.28		p < .01)	
T-TEST MASS-MAES			(t = 0.79		p = n.s.)	

53. I feel that I cannot really be myself or act the way I want to when I am with my family. This statement describes my feelings:

	(1)	(2)	(3)	(4)	(5)	
	VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL	
			MA	AA	BL	MASS MAES
MEAN			3.43	3.71	3.00	3.34 3.88
S.D.			1.29	1.33	1.51	1.27 1.23
T-TEST MA-AA			(t = -2.69		p < .01)	
T-TEST AA-BL			(t = 2.64		p < .01)	
T-TEST MASS-MAES			(t = 3.27		p < .01)	

54. I am confident that I will have at least as much success at what I do in life as others in my family have had. This statement describes my feelings:

	(5)	(4)	(3)	(2)	(1)	
	VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL	
			MA	AA	BL	MASS MAES
MEAN			3.74	3.93	3.96	3.65 4.04
S.D.			0.94	1.00	0.92	0.92 0.97
T-TEST MA-AA			(t = -2.60		p < .01)	
T-TEST AA-BL			(t = -0.14		p = n.s.)	
T-TEST MASS-MAES			(t = -3.21		p < .01)	

55. One day my parents tell me to do one thing, and the next day they tell me to do something different. Lots of times I just don't know what they want me to do. This statement describes my feelings:

(1)	(2)	(3)	(4)	(5)		
VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL		
		MA	AA	BL	MASS	MAES
MEAN		2.96	3.22	3.29	2.97	3.11
S.D.		1.25	1.32	1.49	1.23	0.08
T-TEST	MA-AA	(t = -2.57 p < .01)				
T-TEST	AA-BL	(t = -0.23 p = n.s.)				
T-TEST	MASS-MAES	(t = -0.83 p = n.s.)				

56. I feel very close to my parents. This statement describes my feelings:

(5)	(4)	(3)	(2)	(1)		
VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL		
		MA	AA	BL	MASS	MAES
MEAN		4.09	3.92	4.25	4.03	4.27
S.D.		1.04	1.19	1.27	1.07	0.92
T-TEST	MA-AA	(t = 1.86	p = n.s.)			
T-TEST	AA-BL	(t = -1.38	p = n.s.)			
T-TEST	MASS-MAES	(t = -1.73	p = n.s.)			

57. I feel that the different parts of my life (e.g. family, friends, school) do not fit together very well. This statement describes my feelings:

(1)	(2)	(3)	(4)	(5)		
VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL		
		MA	AA	BL	MASS	MAES
MEAN		3.26	3.45	3.18	3.22	3.56
S.D.		1.15	1.13	1.30	1.51	1.23
T-TEST	MA-AA	(t = -2.14		p < .05)		
T-TEST	AA-BL	(t = 1.16		p = n.s.)		
T-TEST	MASS-MAES	(t = -2.19		p < .05)		

58. There always seems to be something that keeps things from turning out right for me. This statement describes my feelings:

(1)	(2)	(3)	(4)	(5)		
VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL		
		MA	AA	BL	MASS	MAES
MEAN		2.85	3.17	2.96	2.88	3.07
S.D.		1.14	1.25	1.31	1.11	1.17
T-TEST	MA-AA	(t = -3.46		p < .01)		
T-TEST	AA-BL	(t = 0.83		p = n.s.)		
T-TEST	MASS-MAES	(t = -1.28		p = n.s.)		

59. I have trouble finding enough hours in the day to do everything that I want to do. This statement describes my feelings:

(1)	(2)	(3)	(4)	(5)		
VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL		
		MA	AA	BL	MASS	MAES
MEAN		2.67	2.30	3.22	2.75	2.50
S.D.		1.29	1.28	1.53	1.29	1.28
T-TEST	MA-AA	(t = 3.65		p < .01)		
T-TEST	AA-BL	(t = -3.49		p < .01)		
T-TEST	MASS-MAES	(t = 1.43		p = n.s.)		

60. I am an unusually nervous person. This statement describes my feelings:

(1)	(2)	(3)	(4)	(5)		
VERY WELL	FAIRLY WELL	DON'T KNOW	NOT VERY WELL	NOT AT ALL		
		MA	AA	BL	MASS	MAES
MEAN		3.62	3.78	3.40	3.63	3.79
S.D.		1.24	1.25	1.62	1.22	1.20
T-TEST	MA-AA	(t = -1.68		p = n.s.)		
T-TEST	AA-BL	(t = 1.17		p = n.s.)		
T-TEST	MASS-MAES	(t = -0.98		p = n.s.)		

61 When something that you do does not turn out well,
how often do you do each of the following:

A. I forget about the whole thing because it doesn't
 really matter anyway.

(5)	(4)	(3)	(2)	(1)		
ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER		
		MA	AA	BL	MASS	MAES
MEAN		2.72	2.37	2.41	2.76	2.57
S.D.		0.95	0.86	1.05	0.99	0.76
T-TEST	MA-AA	(t = 4.74	p < .01)			
T-TEST	AA-BL	(t = -0.18	p = n.s.)			
T-TEST	MASS-MAES	(t = 1.81	p = n.s.)			

B. I do not worry too much about what went wrong, but
 I try to do better in the future.

(5)	(4)	(3)	(2)	(1)		
ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER		
		MA	AA	BL	MASS	MAES
MEAN		3.60	3.50	3.61	3.54	3.80
S.D.		0.98	0.91	1.34	1.00	0.93
T-TEST	MA-AA	(t = 1.27		p = n.s.)		
T-TEST	AA-BL	(t = -0.40		p = n.s.)		
T-TEST	MASS-MAES	(t = -2.00		p < .05)		

C. I become frustrated and try to forget the whole
 thing, but I can't.

(5)	(4)	(3)	(2)	(1)		
ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER		
		MA	AA	BL	MASS	MAES
MEAN		2.95	2.85	3.00	3.01	2.69
S.D.		1.07	1.05	1.44	1.08	1.06
T-TEST	MA-AA	(t = 1.19	p = n.s.)			
T-TEST	AA-BL	(t = -0.52	p = n.s.)			
T-TEST	MASS-MAES	(t = 2.25	p < .05)			

D. I become angry, and try to take it out on someone else.

(5)	(4)	(3)	(2)	(1)		
ALWAYS	USUALLY	SOMETIMES	RARELY	NEVER		
		MA	AA	BL	MASS	MAES
MEAN		2.44	2.36	1.88	2.42	2.42
S.D.		1.59	1.00	0.89	1.14	1.08
T-TEST	MA-AA	(t = 0.89		p = n.s.)		
T-TEST	AA-BL	(t = 2.36		p < .05)		
T-TEST	MASS-MAES	(t = -0.01		p = n.s.)		

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