MOTIVATORS FOR COLON CANCER PREVENTION AMONG ELDERLY MEXICAN AMERICANS

Judith T. Gonzalez
California State University, Fresno

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Mexican American Studies & Research Center
César E. Chávez Building, Rm 208
The University of Arizona
Tucson, Arizona 85721-0023
(520) 621-7551 • FAX (520) 621-7966
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E-mail: masrc@email.arizona.edu

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ABSTRACT

This final report documents the theoretical development and preliminary empirical testing of a model that predicts the conditions under which Hispanics will seek preventive vhealth care. Research shows that Hispanics delay preventive care, resulting in higher morbidity and mortality rates for serious diseases such as cancer. Since many serious diseases, such as heart disease, diabetes and cancer can be prevented or treated more effectively if detected early, it is crucial to understand the motivating forces behind Hispanics' preventive health behavior. The Hispanic model, which is an extension of the Health Behavior in Cancer Prevention Model developed by Atwood, et al. (1986), includes as core variables environmental barriers to access and English-language proficiency, as well as social support, health beliefs, self-efficacy (or perceived skill), health locus of control, and health values.

This correlational descriptive study employed snowballing sampling methods and consisted of 199 Hispanics between 49 and 94 years of age. Measures consist of multi-item scales whose content follows that of the Parent Project. The final instruments showed reliability (Alphas between .69 and .95), although the model testing was limited by the exclusion of some constructs that did not demonstrate reliability. The outcome of predisposition to self-care was predicted by utilization barriers to care, Chance Health Locus of Control, and General Health threat, resulting in an R-square of .07. The findings dealing with dietary preferences and preferred dietary modifications also have great implications for interventions aimed at preventing colon cancer among Hispanics. The practical health policy applications of the model are also discussed.

INTRODUCTION/AIMS OF THE STUDY

Many serious diseases, such as heart disease, cancer, and diabetes can be prevented or treated successfully if detected early. Yet current research shows that Hispanics[1] are not receiving early preventive care (Daly, et al.,1985). Crucial to changing this trend is the understanding of how preventive health behavior is affected among Hispanics, which requires the development and testing of a theoretical model that takes into account unique environmental and cultural factors that affect Hispanics' health behavior. The development and testing of such a model is the subject of this research. The goal of this research is to answer several questions regarding Hispanics and preventive health care, and to provide policy oriented information regarding current dietary practices and preferred treatment strategies.

This theoretical model, the Hispanic Health Behavior in Cancer Prevention Model is based on the Health Behavior in Cancer Prevention Model (Atwood, 1986). The outcome of interest, preventive health behavior, refers to any behavior directed to the prevention or detection of disease at the asymptomatic stage (Kasl and Cobb, 1966). It consists of three components: compliance, adherence to a provider-initiated therapy, and self-care. Compliance results when the patient implements the provider's course of treatment (Basch, et al., 1983; Hershey, et al., 1980; Watts, 1982). Adherence is a negotiated agreement between the client and the provider initiated by the latter (Hindi-Alexander and Throm, 1987). Self-care refers to client-initiated behavioral change designed to promote health without the provider's direct involvement. Self-care requires considerable independence and decision making congruent with the patient's culture (Pender, 1987).

The key components of the proposed model are: 1) the relationship of self-efficacy, one's perceived capacity to perform a given preventive behavior, to predisposition to colon cancer prevention, 2) the relationship of health locus of control to predisposition, 3) health

beliefs as antecedents to predisposition, 4) the impact of objective barriers to care and current dietary practices on predisposition, and 5) the role of social support networks in predisposition to colon cancer prevention. Within this context, this research proceeded to answer the following range of questions:

1. What types of colon cancer preventive strategies are Hispanics most likely to adopt?

2. What are current dietary practices and how do these practices relate to perceived risk for colon cancer?

3. What are the most salient environmental barriers to preventive behavior?

4. How do social networks operate to facilitate or inhibit predisposition to colon cancer prevention?

5. Specifically, do these networks increase self-efficacy and internal control of health outcomes? Do these networks lessen barriers to utilization of health care?

6. Are highly efficacious Hispanics more likely to choose more complex preventive strategies? Do Hispanics low in self-efficacy avoid colon cancer preventive strategies?

7. What is the association between acculturation and current dietary practice to predisposition to engage in preventive care?

8. What is the relationship of Health Locus of Control, knowledge levels, perceived severity and perceived susceptibility to cancer and health values to intent to engage in preventive care?

The data gathered and analyzed in this report answers all questions except 6, 7 and part of question 8. Measurement problems with the efficacy and health value scales prevented analysis of the relationship between efficacy, health values, and predisposition to self-care.

What follows is a discussion of delayed health care among Hispanics, a description of the Hispanic HBCP model, and the extant literature concerning it. Preliminary results of an empirical test of the major aspects of the model and the policy implications of these results make up the final section of the report.

IMPORTANCE OF PREVENTIVE CARE

In a cross-sectional study of San Antonio Mexican American and Anglo females, Daly, et al. (1985) found important differences between the two groups at first diagnosis for breast cancer. Compared to Anglo women, significantly more Mexican American women over 50 years of age had larger tumors, axillary mode involvement and showed an estrogen negative receptor status at time of breast cancer diagnosis. Solis, et al. (1985) also found the rate of invasive cervical cancer in Mexican Americans to be two times as high as for other whites. Samet, et al. (1987) examined cancer survival rates by ethnic group for 31,465 incident cases diagnosed from 1969 to 1982 in New Mexico and Arizona. Hispanic cancer patients were significantly more likely to have more advanced cancers at first diagnosis than were whites. One- and five-year survival rates were computed for each type of cancer. Overall, one -and five-year survival rates for Hispanics were significantly lower than for Anglos. Hispanics were also significantly less likely to have received treatment for the cancer after initial diagnosis when compared with Anglos.

The data clearly indicate that Mexican Americans are less likely to engage in preventive care, are diagnosed later for cancer, delay treatment once cancer is diagnosed, and show poorer survival rates. Data on Hispanic colon cancer rates from Los Angeles County Cancer Surveillance Program and nationwide (Mack, et.al., 1985; Proceedings of the Hispanic Cancer Control Program Workshop, National Cancer Institute, 1986) show that rates for Hispanics are climbing. Savitz (1986) presents data showing a 150 percent increase in Hispanic colon cancer incidence from 1971 to 1981. Additionally, colon cancer risk rates (Savitz, 1986) were 0.4 for immigrant Mexican Americans compared to 0.9 for native born Mexican Americans. Savitz' data suggest that acculturation as measured by years in the United States relates to a higher incidence and increasing risk for colon cancer among Mexican Americans.

MODEL STRUCTURE

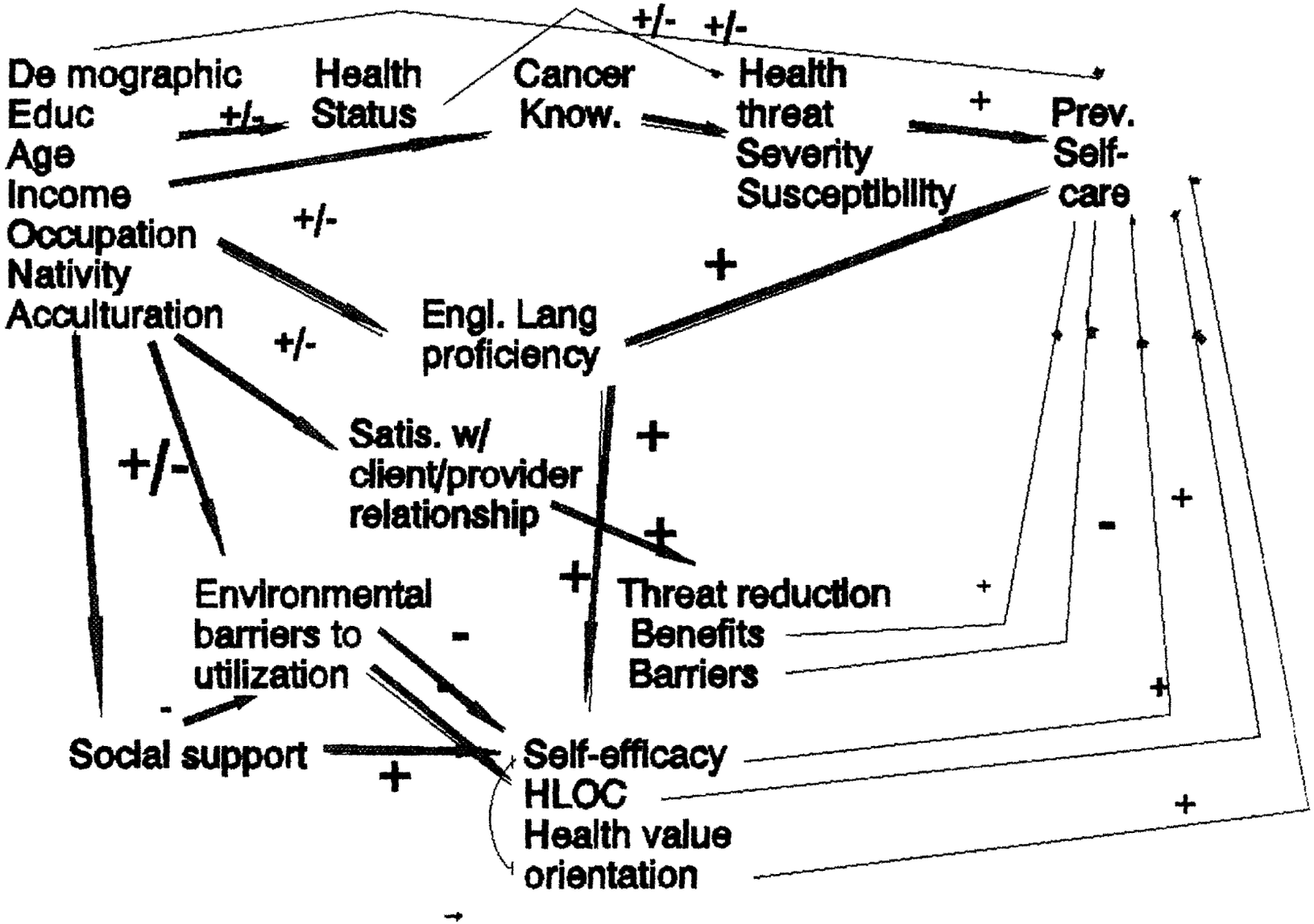
The five-stage Hispanic Health Behavior in Cancer Prevention model is based on a careful review of the compliance and adherence literature and the Health Behavior in Cancer Prevention Model (HBCP) (Atwood, 1986).

A milestone in the organization of the compliance literature is the work of Cummings, et al. (1980). Using the myriad variables previously substantiated as predictors of compliance, these researchers gathered these variables from McKinlay's (1972) taxonomy and submitted them to a content validity analysis using an expert panel of judges. Smallest space analysis revealed six unique groupings: 1) accessibility of health services, i.e., physical availability of services and ease of communication with the provider; 2) attitudes toward health care, e.g. health value orientation; 3) threat of illness (health belief model), e.g., perceived severity and susceptibility; 4) knowledge about disease; 5) social interactions, social norms, and social structure: 6) demographic characteristics (Cummings, et. al., 1980, p.137). Each of these are included in the adapted HBCP model.

Hence, the full Hispanic Health Behavior in Cancer Prevention Model includes background demographic factors, health knowledge, the Health Belief Model, health status, health values, self-efficacy, and social support. The Hispanic Model also includes English-language proficiency, and barriers to health care utilization as core components. English-language proficiency and barriers to utilization are not included in the original Health Behavior in Cancer Prevention Model (Atwood, et al., 1986). These last two factors, specific to the Hispanic HBCP model and their posited effects on preventive health behavior, are outlined in this report.

The HBCP applied to Hispanics consists of five stages as illustrated in Figure 1. Its theoretical underpinnings are substantiated in the literature review.

FIGURE 1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The linkages are as follows:

1. Stage I: background demographic variables that relate directly to barriers to utilization, social support, preventive health care and English proficiency. (Atwood, et al, 1985; Murdaugh and Hinshaw, 1986)

2. Stage II: model variables are social support, (Tilden and Gaylen, 1987) health status, (Belloc and Breslow, 1972) and barriers to utilization (Hochbaum, 1958; Estrada, 1987).

3. Stage III: model variables are: English language skill, knowledge of disease, and satisfaction with the health care provider.

4. Stage IV: model variables are perceived health threat (severity and susceptibility) threat reduction (benefits and barriers) (Becker, et al, 1977 a, b; Haefner, et al, 1967) health locus of control, (Rotter, 1954; Lau, 1982) health value orientation, and perceived treatment efficacy.

5. Stage V: outcome variable of preventive health behavior. The causal linkages among the variables are specified with straight arrows. Correlational relationships are illustrated with curved double arrows.

THEORETICAL SUPPORT FOR THE MODEL

The research literature from various disciplines has shown ample evidence supporting behavioral factors as determinants of compliance and adherence (e.g., DiMatteo and DiNicola, 1982; Cummings, et. al., 1980; Eraker, et. al., 1984; Basch, et. al., 1983; Becker, et. al., 1977a, b; Maiman, et. al 1977; Pender, 1987; Sackett and Haynes, 1976). Previous models explaining preventive behavior have included examination of structural, situational, knowledge levels, personal motivations toward prevention, and self-efficacy (Bandura, 1977, 1982a,b).

Self-Efficacy

Self-efficacy is a key predictor of adherence to therapeutic or preventive regimens (Sackett and Haynes, 1976; Bandura, 1977; 1982a,b). Research by Bandura (1982a,b) substantiates that, if an individual judges him/herself to be capable of executing a given action, he/she will perform the action more proficiently. Personal efficacy is vital to

performance (O'Leary, 1985) because of the cognitive-action link between underestimation of abilities and poor performance. Gilchrist and Schinke (1983) found that adolescent females with higher self-efficacy were more likely to report continued contraceptive use at the six-month evaluative follow up. Condiotte and Lichtenstein (1981) also found a relationship between high self-efficacy and successful smoking cessation over time. Chambliss and Murray (1979) found that those who were more efficacious lost significantly more weight than those scoring low on self-efficacy.

Self-efficacy is social in origin and may vary according to the complexity of the focal task. (Kegeles and Grady, 1983; Bandura, Grady, 1977; 1982a,b). For example, taking a fiber/calcium supplement is a simple act, while introduction of fiber via dietary modification requires a more complex set of behaviors. Dietary modification encompasses new or unfamiliar food selection and purchases, meal planning and preparation, as well as negotiation with family members to cooperate. The more complex the new set of tasks, the more likely that less self-efficacious individuals will experience anxiety and resistance to adaptation (Bandura, 1982a,b).

Furthermore, self-efficacy is affected by cues from the social environment that reinforce or decrease its strength (Bandura, Adams, and Beyer, 1977; Biran and Wilson, 1981; Feltz, et al., 1979. Others in the social environment reinforce the appropriateness of a given behavior, can teach or model correct behaviors and can provide feedback to affect self-efficacy (Bandura, Reese, and Adams, 1982; Gottlieb, 1981; Barrera, 1986; Israel, 1982, 1985). Thus self-efficacy is postulated to be directly affected by social support.

Social Support

Social support from familial or friendship networks can affect preventive health behavior in other ways. Social support (i.e., encouragement) can include material assistance,

emotional support in the form of encouragement and feedback to correct inappropriate behavior (Gottlieb, 1981; Barrera, 1986; Israel, 1982; and Cassel, 1976). Research shows that positive social support provides emotional support (Lewis, 1966), referrals and information (McKinlay, 1973; Granovetter, 1976), a context for learning effective coping strategies (Bloom, et al., 1978; Hubbard, et al., 1984), and feedback to correct inappropriate actions (Cassel, 1976). Bloom et al. (1978) documents the relationship of social support from the immediate kinship and friendship network(s) as predictive of adjustment to postoperative status and compliance to subsequent treatment. Heinzelman and Bagley (1970) found that a wife's support of preventive health programs for heart disease predicted the husband's level of compliance to a special health activity program. Diamond, Weiss and Grynbaum (1968) report that the family's support of rehabilitation is the most important factor in determining the patient's participation in spinal cord rehabilitation and compliance with physical therapy.

In contrast, more recent research shows that social support has costs as well as benefits. Tilden and Gaylen (1987) cite evidence from a variety of studies that document the negative effects of certain support functions on health outcomes. Many of the negative effects stem from the reciprocal obligations that ensue from receiving social support -- obligations which are perceived as a cost (e.g. guilt). Another negative effect can be the perception that one's privacy is invaded once another person in the support network has helped the individual at an emotional level. The need for adequate personal space appears to apply cross-culturally. In their study of the support functions of Mexican American families, Keefe, et al. (1979) found some respondents who reported avoiding seeking emotional support in order to prevent invasion of privacy.

Health Locus of Control

Other research supports the role of health locus of control in affecting health behavior

(Lau, 1962). One's perception of control as emanating from internal sources has been shown to relate positively to adherence to hypertensive treatment (Kirscht and Rosenstock, 1974), weight control programs (Chambliss and Murray, 1979), and self-selection into BSE training (Grady, et al., 1983).

A number of researchers propose that Mexican Americans are more likely than Anglos to believe in chance or external control (Jessor, et al., 1968; Kluckhohn and Strodtbeck, 1961; Madsen, 1969). The Copeland, et al. (1983) study suggests that Hispanics may be less internally controlled with regard to health, as Hispanic parents in the study reported less participation in therapeutic decisions made about their childrens' cancer treatment. Mirowski and Ross (1984) contend that Mexican culture is related to external locus of control and hence, higher levels of depression. Developing a structural equation model (Joreskog and Sorbom, 1986), they conclude that belief in external control was an intervening factor between Mexican culture and level of depression. However, these authors assumed that Mexican culture per se and not other factors were the cause of external control. The relationship between external control and Mexican culture could be an artifact of income, education, or other life experiences. The empirical assumptions made under LISREL were also questionable, since they did not indicate the respective t-values for the gamma and beta coefficients. Furthermore, the authors base their decisions about fixing or freeing parameters based on the standard errors of the coefficients.[2] The linkage between Mexican heritage and external locus of control may be due to impoverished status and not cultural differences (Casavantes, 1970; Garza and Ames, 1976). Copeland, et al.(1983) note that lack of fluency in English is an important factor that could impede effective health care decisions. Thus, income and English-language proficiency are important factors to consider as antecedents of health locus of control among Hispanics.

Health Value Orientations

Health value orientations are one's specific beliefs about the importance of health care. They are important standards on which health behavior is based and derive from one's socio-cultural milieu. Health value orientations are linked to preventive care (Murdaugh, 1982). Castro, et al. (1984) contend that Mexican American women have a dual system of health value orientations which include a reliance on traditional folk remedies and illness etiology, along with a high degree of trust in physicians, and strong acceptance of cardiovascular and stress illness concepts. These contrasting belief sets do not impede health care among Hispanics, but it is possible that decisions regarding when to use either system could possibly delay seeking of medical treatment.[3]

The Health Belief Model

The Health Belief model is often applied to explain preventive behavior. This model (Janz & Becker, 1984; Rosenstock, 1974) postulates that health behavior is a function of three factors: 1) perceived severity of the disease in question, 2) perceived susceptibility, and 3) a balance between barriers and benefits of a given therapeutic or preventive strategy.

The original Health Belief Model has been a central focus of compliance research. Several studies testing the Health Belief Model show that a patient's perception of disease as serious (Becker, Drachman, and Kirscht, 1972; Francis, et al., 1969; Haefner & Kirscht, 1970; Kegeles, 1963; Neely & Patrick, 1968) is positively related to compliance; while other studies show no significant relationship between perception of severity and compliance (Macrae, et al. (1984).

For example, Macrae et al. (1984) found that only perceived internal barriers, such as inconvenience and embarrassment were predictive of compliance with colon cancer screening. Perceived severity and susceptibility were not significant predictors of compliance. However,

validity of their measures was not identified. More recent research continues to demonstrate incomplete or contradictory findings (Calnan & Rutter, 1988); even less is known about the Hispanic population. Hence the Health Belief Model is included in the model as a predictor of preventive health behavior.

In summary, research testing the Health Belief Model has been plagued with inconsistencies. Kegeles (1963) found that perceived severity of dental disease bore no association with maintained prophylaxis. An earlier study by Hochbaum (1958) showed a positive relationship between perceived susceptibility and benefits and rate of voluntary tuberculosis x-ray screening, lending support to the health belief model. Other studies (Pender, 1987; Becker, et al. 1977a) also support the HBM. Calnan and Moss (1984) found that perceived vulnerability to breast cancer failed to discriminate between women who performed breast self examination satisfactorily at a six-month follow-up and those who were not proficient, but did predict first attendance at a training class. Apparently, maintenance and proficiency of behavior require other factors not accounted for in the Health Belief Model.

Other aspects of health behavior, such as background demographic variables (Sackett and Haynes, 1976; Cummings, et al., 1980; Rosenstock, 1974) health status (Belloc and Breslow, 1972), social support (Gottlieb, 1981; Cummings, et al., 1980); self-efficacy, (Chambliss and Murray, 1979; O'Leary, 1985, and others) and accessibility to health care (Cummings, et al., 1980; Estrada, 1987) have been shown to relate to preventive behavior.

Knowledge Levels and Client/Provider Relationship

Knowledge of the disease and satisfaction with the client/provider relationship are two additional foci of the full Hispanic Health Behavior in Cancer Prevention Model. Several studies show an association between knowledge of disease and compliance (March and Perlman, 1972; Tash, et al., 1969; Watkins, et al., 1967), while others show no association

between knowledge levels and compliance for the general population (Evans, et al., 1970; Suchman, 1976; Weintraub, et al., 1973).

In case studies of Mexican American pediatric heart patients and their parents, Anderson, et al. (1982) found that a communication gap between Mexican American parents and the physician impeded the acceptance of diagnosis. In cases where the physician validated the parents' religious values and beliefs about treatment, he was able to reach consensus with the family and progress with appropriate treatment. These findings indicate that in the absence of sound patient/doctor communication, the physician's diagnosis will not result in patient adherence to treatment regimens.

Similarly Copeland, et. al., (1983) provide interesting descriptive data on Hispanics' knowledge of disease and satisfaction with the client/provider relationship. Their study assessed the attitudes of Hispanic and Anglo parents toward their childrens' cancer treatment. Significant differences between Anglo and Hispanic parents were reported regarding confidence in the physician, comfort in approaching the physician, and level of information regarding their child's disease.

Utilization Barriers

Motivation to engage in preventive behavior can be lessened by utilization barriers that impede action. These physical barriers can consist of tangible obstacles to access, lack of material resources (Bandura, 1977, 1982a), and poor environmental reinforcement. Any of these factors can constrain action.

There can be a number of specific utilization barriers that can minimize an effective cognition--action linkage for Hispanics. utilization barriers are obstacles to access of health care, in contrast to a cognition or attitude that one might hold toward the health care system or specific treatment. Several possible barriers are the cost of preventive care, lack of

transportation or childcare, and lack of Spanish-speaking staff (Marin, et al. 1983). Past studies have not clearly differentiated between access barriers and internal barriers, such as those reported in Macrae, et al. (1984). Preliminary work being done by Estrada (1988)[4] clearly shows cost of care and knowing where care is available to be the highest ranked barriers that prevent elderly Hispanics from getting needed care. Moreover, over 20 percent of the elderly Hispanics having some form of health insurance reported having other barriers that prevented health care. Other barriers for elderly Hispanics consisted of transportation, childcare, and institutional obstacles such as inconvenient clinic hours, long waits in office, and excessive lag time between calling for an appointment and actually seeing the doctor. For hypertensive and diabetic Hispanics, over 80 percent of those who reported one or more barriers to care also stated that these barriers prevented them from getting needed medical care. Clearly, those Hispanics most in need of care were not receiving medical attention, regardless of cognitive or behavioral factors that might impact preventive care. Marks et al. (1987) found that access to health care and availability of services were stronger determinants of Hispanic health behavior than level of acculturation and English-language proficiency. Level of acculturation and English-language proficiency had a weak, but significant effect on health behavior. This data clearly suggests that access barriers are distinct from individual level barriers, such as fear and embarrassment, or inconvenience of treatment. The behavioral model presented here separates the two types of barriers and places physical barriers to utilization as antecedent to internal barriers. In this way, the distinct impact of types of barriers can be assessed in empirical tests of the model.

Demographic Background as a Predicator of Preventive Health Behavior

Finally, based on this previous work background social characteristics are predicted to affect preventive health behavior. Rosenstock's (1974) research documents that there is a

positive relationship between delay in seeking diagnosis and socioeconomic status. Persons who delay tend to be older, less affluent, members of ethnic minority groups, and/or male. Socioeconomic status, marital status, and acculturation level are predicted to have differential effects on preventive health behavior through intervening variables such as English language proficiency, health status and social support. For example, Richardson, et al. (1987) in their study of 600 elderly Mexican American women found that refusal to participate in a simulated breast self-examination was related to age and level of acculturation. Among those who participated, proficiency in locating lumps in the breast model was positively related to younger age and higher level of acculturation, which in turn were related to greater English language proficiency. However, this study also documented that barriers to utilization were more powerful predictors of continued preventive health care than were age or level of acculturation.

RESEARCH DESIGN

Study Design

This correlational, descriptive design utilized a guided interview whose form contained predominantly Likert-type responses to specific items extracted from the Health Behavior in Cancer Prevention Questionnaire (Atwood, et al., 1987) and translated into Spanish. This design was used to test the HBCP Model's ability to promote understanding of how preventive health behavior is affected among Hispanics and to refine the instruments needed for model testing.

Questionnaire Design Procedure

The original draft of the interview questionnaire began with the use of a small pilot group (N=12). These respondents were asked to comment on the questionnaire's content and

length and to ask for clarification whenever they needed. These elderly respondents reported being bored with the interview, and many requested that we terminate the interview midway because of fatigue. Over half of the original 12 pilot respondents also became distracted by others in their social environment at the senior centers, further delaying the administration of the interview. They also tended to respond on the extreme ends of the original 5-point agreement scale, i.e., either strongly agree or strongly disagree with many saying, "I don't know." Thus, this pilot study defined the need to shorten the questionnaire and to simplify the Likert scales for the Health Behavior battery. The Likerts were shortened to a 3-point scale of "yes, no, or I don't know." For this reason, some of the constructs of the full HBCP model were excluded, an abridged dietary battery was employed, and the number of acculturation items was reduced. The location of administration was also changed, because of the distraction occasioned by companions in senior social centers or nutritional centers. For the final study, elders were interviewed at a place of their choice for the duration of the study.

The interview instrument was translated and then back-translated to ensure that it was conceptually equivalent to the Health Behavior Questionnaire used by the Atwood, et al. (1987) parent project in the interviews of Anglo elderly.

Sampling Method

Agencies offering services to elderly Hispanics were initially contacted by mail and invited to participate in the project as recruitment centers. Those agencies which accepted were visited and the project's rationale, goals, procedure and instrument were explained to program heads and directors. Once they were informed, a meeting with potential respondents was held. At these meetings, a simple explanation of the objective of the project, as well as a clear description of what would be asked from those who participated--type of questions and an estimate of time required--was given in both English and Spanish. After requesting their

participation, those who volunteered arranged an appointment with one of four possible interviewers at their place and time of choice. At this point, the language in which they preferred to be interviewed was recorded. Upon conclusion of the interview, respondents were asked about friends and/or relatives over 50 years of age that would be willing to participate in the project. Hence, a "snowballing" sampling technique was employed, a method considered acceptable when sampling rare populations (Kalton & Anderson, 1986). While population based random sampling was optimal, the cost was prohibitive. Agencies contacted and respective directors in order of number of respondents recruited were:

-Quincy Douglas Center (Carlota Vega)

-St. Elizabeth of Hungary Clinic (Sr. Rose Miller/Dr. Augusto Ortiz)

-Chicanos por la Causa (Lorraine Lee)

-Pima Adult Education Program (Dave Hogate)

-El Pueblo Clinic (Marco Antonio Moreno-Campoy)

Sample Characteristics

The sample consisted of 199 elderly Mexican Americans; 166 were female and the remainder were male. The youngest respondent was 49, the oldest 94; the mean age was 64. Close to eighty percent (79.6%) of the sample was of "blue-collar," working-class background, i.e., unskilled, semi-skilled, or skilled laborers or married to men of those classes. Thirty-eight percent (n=76) were born in Mexico, the remainder (n=123) were born in the United States. Fifty-five percent (n=lO9) chose to take the interview in Spanish, the remaining 45 percent (n=9O) in English. Fifty-seven percent of the respondents (n=lO7) reported a family income of less than $849 per month, or $10,108 annually. The most frequent and median income category was between $400-849 per month, with 30 percent (n=56) reporting incomes in this category. Fourteen respondents (7%) did not report their income. The mean years of

schooling for this sample was 7.8 years, the median 8 years. (s.d.=4.283). Only 16.6 percent finished high school, while 72.3 percent of the sample had less than a high school education, and 6.5 percent reported no schooling at all. Only 12 percent of the sample reported any schooling beyond high school. Sixteen percent of the respondents' spouses were currently unemployed or retired, and 26 percent of the respondents were either unemployed or retired.

In essence, this sample reflects a low-income group with limited schooling and English skills, in spite of the majority being born in the United States. The following description of measures and analysis is in three parts, 1) measurement issues, 2) testing of the HBCP model, and 3) description of the dietary modifications and preferences.

PART I

MEASUREMENT ISSUES/VALIDITY AND RELIABILITY ANALYSIS

The criteria for inclusion or exclusion of items and scales were several. These criteria were applied in steps, starting from the original item correlations, moving to the Alpha and thetas, then to factor analysis, and back to the Alpha analysis if the factor analysis revealed the need to eliminate items. The goal was to maximize a scale's internal consistency and construct validity. Specific criteria for inclusion or exclusion of an item in a final scale are as follows:

1. Original item correlations <=.20 or >=.70. (exclusion)
2. Alphas and/or thetas > .70. (inclusion)
3. Factor loadings < .30. (Nunnally, 1978; Carmines and Zeller, 1983).
4. Redundancy of item factor loadings > .30 with < .20 in difference between two or more loadings on factors whose eigenvalues were greater than 1. (exclusion of an item)

Measures of Model Variables

The present study was a partial test of the full Hispanic HBCP model for several reasons. The foremost reason was the need to shorten the interview instrument in order to avoid respondent dropout from the study. The second reason was the desire to include as many items as possible that were originally in the Health Behavior Questionnaire designed by Atwood, (1987)[5] used in the parent project due to terminate June, 1990, with Anglo elders. In this way, we would have comparable results between Anglo and Mexican American elderly. For these reasons, it was ecided a priori to exclude measures of physical health status, satisfaction with the health care provider, and internal barriers to care, a component of the aforementioned Health Belief Model. Utilization barriers to care were included in lieu of the internal barriers to care because of the extant research showing those to be important

predictors of health care among low-income Hispanics. All items, with the exception of the demographic information, utilization barriers to health care, and the dietary battery are directly adapted from the Atwood (1987) Health Behavior questionnaire. Descriptive statistics for major model variables appear in Appendix A.

Other important constructs were excluded from analysis after the validity and reliability testing revealed that component items did not form acceptable scales. These were: 1) self-efficacy; 2) health value orientation, and 3) health locus of control-self control dimension. In no case were more than 50 percent of the original items designed to measure each construct correlated more than .70, so items were not removed based on this criteria.

Instrumentation

This section details the results of the reliability and validity testing of the instruments used to measure key concepts of the Hispanic HBCP model. Each instrument is presented by stage, working backward from Stage 5, and by specific construct that is measured, and Alpha and theta values are given for each scale.

STAGE 5: Outcome Variable-Preventive Self-Care

Preventive self-care was a single item that asked respondents to consider a variety of possible dietary modifications and/or fiber supplements and to state whether they would be willing to stay with one of these plans for at least four years. Respondents could answer: yes, no, or don't know. The mean score was 4.40 (s.d.=1.42).

STAGE 4: Health Locus of Control

The Health Locus of Control construct consisted of three distinct subdimensions that have been substantiated in previous research using this construct, (e.g., Atwood, 1986; Lau & Ware, 1981). These are: belief in chance control over health, self-control over health and belief in the provider/physician control over health, Each is detailed as follows.

STAGE 4: Health Locus of Control (Provider Control)

Health Locus of Control (provider control) consisted of five items: 1) "Seeing your doctor for regular checkups is a key factor in staying healthy," 2) "Recovery from illness requires good medical care more than anything else," 3) "Most people are helped a great deal when they go to a doctor," 4) "Your doctor can almost always help you feel better," and 5) "Seeing your doctor will help to prevent illness," Factor analysis, item means and standard deviations appear in Table 1 of Appendix B. Alpha for this scale was .70 and theta was .71. The scale mean was 8.5 (s.d.=4.67)

STAGE 4: Health Locus of Control -- Chance

Health locus of control (chance) consisted of four items: 1) "When it comes to getting sick, some people just have 'bad luck,' 2) "Staying well has to do with chance," 3) "Good health is largely a matter of fortune," and 4) "People who never get sick are just plain lucky." Factor analysis, item means and standard deviations appear in Table 2 of Appendix E. Alpha and theta for this scale were .68 and .69 respectively. The scale mean was 15.9 (s.d.=4.60).

The self-control dimension did not form an acceptable scale, as neither the Cronbach Alpha nor coefficient theta reached or exceeded .69-.70. Therefore, this construct was not included in subsequent analyses.

STAGE 4: Health Belief Measures

This study examined two aspects of the Health Belief Model: 1) Health Threat, and 2) Threat Reduction. Perceived susceptibility, severity and general health threat were three constructs considered subsets of health threat and perceived benefit represented the construct of threat reduction.

STAGE 4: Health Beliefs--Perceived Benefits (Threat Reduction)

Perceived benefit of preventing colon cancer was measured by two single items as

follows: 1) "It is too late for you to prevent colon cancer," and 2) "The knowledge generated from this study may help others prevent colon cancer," These items were directly adapted from the Atwood (1987) Health Behavior Questionnaire. Possible responses were: 1) yes, 3) don't know/maybe, and 5) no. The second benefit item was recoded to have the same valence as the first, i.e., the higher number being an affirmative answer. Respective item means and standard deviations for the benefit measures appear in Appendix A.[6]

STAGE 4: Health Beliefs--Susceptibility to Colon Cancer (Health Threat)

Susceptibility to colon cancer was measured by 5 items directly adapted from the Atwood, et al. (1987) questionnaire. These were: 1) "You feel that your chances of getting colon cancer in the future are good," 2)"Within the next year, you will get colon cancer," 3) "Your lifestyle makes it more likely that you will get colon cancer," 4) "Your chances of getting colon cancer are good," and 5) "Your eating habits make it likely that you will get colon cancer." Item factor loadings, means, and standard deviations appear in Table 4, Appendix B. Respective Alpha and theta values for this scale were: .69 and .71. The scale mean was 19.47 (s.d.=4.28).

STAGE 4: Health Beliefs--Perceived Severity of Colon Cancer (Health Threat)

Perceived severity of colon cancer was measured by six items assessing the individual's perception of how serious a threat to his or her lifestyle colon cancer would be.[7] The items were as follows: 1) "If you had colon cancer, you whole life would change," 2) "If you had colon cancer, you usual activities would be threatened," 3) "Colon cancer would endanger your relationship with the person closest to you," 4) "Your feelings about yourself would change if you got colon cancer," 5) "Problems you would experience from colon cancer would last a long time," and 6) "Colon cancer would seriously affect your financial stability." Cronbach Alpha for this scale is .75, coefficient theta is .76. The scale mean is 14.24 (s.d.=6.37).

Item factor loadings, item means and standard deviations appear in Table 5, Appendix B.

STAGE 4: Health Beliefs--General Health Threat

The third subdimension of health threat is general; general health threat consists of more global items that ask about feeling generally fearful or threatened by colon cancer. Items for this scale were adapted from the Atwood, et al. (1987) Health Behavior Questionnaire and from MacCrae, (1986) and others. For this scale, a higher score signifies less health threat, as individual item responses coded "5" were "no" responses. The scale consists of 5 items as follows: 1) "When you think of colon cancer, you feel sick to your stomach," 2) "The thought of colon cancer scares you," 3) "Your physical health makes it more likely that you will get colon cancer," 4) "You are afraid to even think about colon cancer," and 5) "When you think about colon cancer, your heart beats faster," Cronbach alpha for this scale is .81, coefficient theta is .82. The scale mean was 16.85 (s.d.=6.89). Item factor loadings, item means, and standard deviations appear in Table 6, Appendix B.

STAGE 3: English-Language Proficiency

While some researchers consider English-language proficiency as a construct of acculturation (Cuellar, et al., 1980), the Hispanic Health Behavior in Cancer Prevention Model designates this as a Stage 3 variable, hence, its inclusion in this stage as a separate variable. English-language proficiency consists of five items that requested the individual to state his or her proficiency in speaking, understanding, reading, and writing English, and preferred language. The specific five items are: 1) "How well do you read newspapers and books in English?" 2) "How well do you write letters in English?" 3) "How well do you understand a conversation in English?" 4) "How well do you carry on a conversation in English?" and 5) "What language do you prefer to speak?" Response categories for the first four items were: 1) not at all, 3) some, 5) very well. Responses for the fifth item were: 1) Spanish only, 2)

mostly Spanish, 3) both Spanish/English, 4) mostly English, 5) English only. Those who responded "not sure" or "don"t know" were reclassified as missing data for this item. Cronbach Alpha for this scale was .95; coefficient theta was .96. The scale mean was 16.43 (s.d.=7.13). The English-language proficiency items were factor-analyzed and respective item loadings, item means and standard deviations appear in Table 9 of Appendix B.

STAGE 2: Knowledge of Colon Cancer

Knowledge of colon cancer was measured by eight items assessing correct knowledge of the symptoms and risk factors for colon cancer, and dietary sources of fiber. Some of these items were part of the Atwood, Ho, Sheehan, Sievers (1985) Knowledge Scale. Original items were recoded so that those answering "don't know/maybe" were reclassified as incorrect responses, and so that correct responses received a score of 5 and incorrect responses a 1. This created a more consistent and accurate scale of correct knowledge. Items were as follows l) "The skin and pulp of all fruits and vegetables are a good source of fiber," 2) "Bran cereals such as All Bran are good sources of fiber," 3) "Whole grains such as wheat and oats are good sources of dietary fiber," 4) "A high fat diet increases the risks of colon cancer," 5) "Surgery is a common treatment for removing cancerous colon growths," 6) "People over 50 years old are less likely to get colon cancer," 7) "The removal of polyps (abnormal growths) in the colon decreases the risk for colon cancer," and 8) "Early diagnosis is important for successful treatment of colon cancer." Factor analysis revealed two subdimensions of knowledge: general knowledge of risk, and surgical/medical knowledge. The scale mean was 29.88 (s.d=8.6O). Cronbach Alpha for this scale was .74, coefficient theta was .75. Item factor loadings, means, and standard deviations appear in Table 7, Appendix B.

STAGE 2: Utilization Barriers to Health Care

The scale of utilization barriers consisted of six items that were previously validated and

tested as reliable in a pilot study of Mexican American low-income women and the use of cervical cancer screening and breast self-examination (Gonzalez, 1987). Respective items were: 1) "It takes you a long time to get an appointment," 2) "The waiting time is too long in the office," 3) "The clinic or doctors' fees are too high," 4) "The doctor expects full payment after each visit," 5) "Health insurance is not available for you," and 6) "Household chores do not leave you time to go to the doctor." Respective item factor loadings, item means, and standard deviations appear in Table 3, Appendix B. Cronbach Alpha and theta for this scale were .72 and .73. Scale mean was 11.9 (s.d.=5.81).

STAGE 2: Social Support

Social support was measured by eight items requesting subjects to rate degree of support from family and friends. These items are taken from the Atwood, et al. (1987) Health Behavior Questionnaire. Social support had both positive and negative aspects, as individuals also rated the degree to which they felt obligated to others for support given. The items were as follows: 1) "Your closest friends and family would discuss things that affect your health if you asked them," 2) "Your closest friends and family cause you more stress than happiness," 3) "Your closest friends and family listen to your concerns," 4) "Your closest friends and family would run errands for you if it were necessary," 5) "Your closest friends and family give you helpful advice about your health," 6) "Your closest friends and family interfere with your life," 7) "You can count on your closest friends and/or family to loan you money if you need it," 8) "Your closest friends and family help you as much as you help them." The factor analysis, as shown in Table 8, Appendix B reveals two subdimensions: the positive aspects of social support and the stress that family and friends put on the individual, or the negative "cost" of social support. Cronbach Alpha for this scale was .03; coefficient theta was .74. The scale mean was 13.99 (s.d.=6.76).

STAGE 1: Acculturation

The item adapted for this study was ethnic self- identification, a similar item to that used by Cuellar, et al. (1980) and Marks, et al. (1967). The acculturation items were reduced in order to keep the interview length manageable for an elderly sample. The Cuellar, et al. (1980) instrument also includes friendship patterns, ethnic self-identification of parents, T.V. and radio program preferences, and movie preferences as measures of acculturation.

In this study, other demographic variables were used as proxies for acculturation. Ethnic self-identification was measured by one item that requested respondents to self-designate their ethnicity. Ethnic self-identification was recoded to reflect the difference between 1) Mexican, 2) Mexican-American, Chicano and Hispanic, and 3) other self-designations (i.e., American). The sample was approximately equally divided between those who preferred being called "Mexican" (45%) and those who preferred the designation of "Mexican-American," or "Chicano" (46%). Only 9 percent preferred other designations, such as "American," or "other Hispanic or Spanish descent," Sixty-two percent (n=23) were U.S.-born.

Other demographic background variables, such as years of schooling, occupation and income are entered into Stage 1 of the model and serve as proxy variables that indicate level of acculturation. Years of schooling in particular indicates exposure to the American educational system. However, for the multiple regression analyses, birthplace was converted into a dummy variable, with U.S.-born being the reference group (1) and Mexican-born coded as 0.

Correlations within Measures

Figure 2 illustrates all significant intercorrelations of variables in the Hispanic HBCP model. As can be seen, the various constructs of the Health Belief part of the model are intercorrelated. Severity and susceptibility show a correlation of .32 ($p < .0001$). Severity

and benefits, item 2, are correlated (r=.23; P < .OOO9); severity and benefits, item 1, are correlated .16 (p < .03). Susceptibility and the first benefit item show a correlation of .27 (p <.0001). The second benefit item and general health threat are correlated as well (r=.l9; p < .01). General health threat is correlated to both severity and susceptibility, respective correlations are .50 (p < .0001) and .41 (p < .0001).

PART II

MODEL TESTING

The data set showed significant differences by language of interview, in income, age, and schooling levels. For this reason, one-way ANOVA[8] was used to ascertain differences among age, income, and schooling groups with respect to the major model predictors and outcome variables. Income, age, schooling, and language of interview were not consistently related to different scores for major model constructs, hence, all subsequent analyses were performed using the aggregated sample.

The test of the model follows the original Hispanic HBCP model presented in the original grant proposal and systematically answers the specific research questions delineated in the specific aims of this project. (Refer to introduction).

Correlations Among Model Variables

Prior to multiple regression analysis, multicollinearity needed to be ruled out (r >= .65) among predictor variables entered simultaneously in given regression equation. No notable multicollinearity was found. Bivariate correlations are used as a basis for determining which variables will enter into a regression equation. Each variable that meets the correlation criteria is entered (i,e., p < .05, and no indication of multicollinearity) into the regression equation in a step-wise regression procedure.

Figure 1 shows the intercorrelations of model variables by stage. Many of the posited relationships shown in the theoretical model were not borne out by the results of this study. Those correlations which were not statistically significant are not shown in this figure. In the figure, intercorrelations of variables within each stage are presented first, followed by the intercorrelations specified by the model.

As can be seen by these results, Health Threat (severity, susceptibility and general health threat), Health Locus of Control (Chance--Stage 4), Utilization Barriers to Health Care (Stage 2), and Occupation (Stage 1) were associated with preventive self-care. Because of measurement error, it was not possible to answer the research question regarding the relationship of self-efficacy to preventive self-care, nor to assess the relationship between health value orientation and preventive self-care.

In turn, each of the Stage 4 variables associated with preventive self-care are correlated with other variables in previous stages of the model. As posited in the HECP theoretical model, language proficiency (Stage 3) related to the Stage 4 variable of Health Locus of Control (provider control). However, this aspect of Health Locus of Control was not related to preventive self-care, as had been posited by the theoretical model.

Utilization barriers to health care (Stage 2) were also related to several Stage 1 variables, as posited by the theoretical HECP model. Greater barriers were positively related to greater age, inversely related to level of schooling, and to occupational levels of spouse and self. This means that older respondents with lower levels of schooling and occupation were more likely to report greater barriers to health care. Barriers were positively related to social support. The positive relationship between barriers to health care and social support is contrary to the original model prediction defined in Research Question 5 of the original project aims. Knowledge of colon cancer, a Stage 3 variable, was related to several Stage 1

variables. Ethnic self-identification, spouse's occupation, respondent's occupation, and level of schooling related to knowledge of colon cancer. Those who had higher levels of schooling, higher occupational levels, and tended to see themselves as more acculturated, showed greater knowledge of colon cancer. Knowledge was also related to language proficiency, those being more proficient in English having more knowledge of colon cancer,

The intercorrelations of variables within each stage remain as associations without causal specification in the causal modeling strategy used here.

Multiple Regression Analyses by Stage

Detailed results of the multiple regression results appear in Appendix C. A brief summary of results will be presented in this section. Subsequent analyses will include path analysis and LISREL analysis. Other publications will be empirical tests of subsets of the model, such as the relationship of health beliefs to preventive selfcare. Each regression equation followed the step-wise regression method and was based on the bivariate correlations.

The regression analysis revealed that the most important contributor to the one-item measure of preventive self-care was the utilization barriers construct, carrying 4 percent of the variance. Beta for this variable was -.22, meaning the greater the barriers to care, the lesser the prevention motivation. The next variable to enter into the equation was Chance Health Locus of control, adding another one-half percent to the variance, with a standardized beta of -.12, meaning the greater the chance attribution of health control, the lesser the prevention motivation. The third variable to enter into the model was general health threat, with a beta of .12, meaning that the greater the perceived health threat, the greater the motivation for prevention. At this point, no further variables could enter, and the final R-square was .07, indicating that 7 percent of the variance in the outcome variable could be attributed to these three variables. Final beta weights were -.18, -.13, and .12 respectively for barriers to

utilization, chance health locus of control, and general health threat. Although the bivariate correlations between preventive self-care and occupation, severity, and susceptibility were statistically significant, these variables were not significant predictors of preventive self-care in the final regression. The partial correlations of these variables with the outcome reveal that when the effects of the other variables are taken into account, they do not relate directly to preventive self-care. These findings support both health locus of control and the health belief model as predictors of self-care. Those who have less fear regarding cancer, less belief in chance control over health, and fewer barriers to health care are more likely to engage in preventive self-care. However, the modest R-square of .07 indicates the need to further study these interrelationships and to strengthen the measure of predisposition by using multiple indicators. A single-item measure is not able to capture the whole of what constitutes motivation toward selfcare.

Predictors of Stage 4 Variables

Following the bivariate correlations, general health threat was regressed on utilization barriers to health care. Other variables that were not significantly correlated to general health threat were not entered into the equation, nor were variables within the same measure that were correlated to general health threat. Utilization barriers to health care predicts degree of general health threat, the beta weight being -.21. This factor alone contributes only 4 percent of the variance in general health threat. For those who have higher barriers to health care, there is higher perceived threat of colon cancer.

Health locus of control (chance) was regressed on level of schooling, social support, and age. No other variables were entered into the regression equations. All three variables were significant predictors of health locus of control (chance). Resultant R-square was .06 and respective beta weights for schooling, social support, and age were .13, -.15, and -.09. Higher

schooling was positively related to greater belief in chance control over health, a surprising finding. Age and social support were negatively related, hence greater age and level of social support predicted less belief in chance control over health.

Other regression equations appear in Appendix C. However, since other Stage 4 variables did not predict preventive self-care, they are not detailed in the results section. Refer to Appendix C for all other regression models.

The results appear to support a much simpler model than the original Hispanic HBCP model. Further testing of this model with other Hispanics and other forms of preventive health behavior are recommended. The use of a multi-item scale to measure preventive self-care is also strongly recommended. The degree to which a single measure of prevention motivation can capture the complexity of health motivation is very questionable.

PART III

DIETARY MODIFICATIONS & IMPLICATIONS FOR INTERVENTIONS

To further probe respondents' predisposition to dietary modification, respondents were asked to state why they could or could not not stay with one of the aforementioned modification plans for four years. See Appendix D, question number 128, for the complete choices. These responses were clustered and recoded into the following categories:

1. Any affirmative response related to improving one's health (40.2%-N=80).
2. Affirmations related to taste or preference for certain foods (10%-N=20).
3. Negative responses related to getting bored or tired of the diet (3%-N=6).
4. Keeping this modified diet would require major effort, and is more complicated (6%-N=12).
5. Keeping this diet is possible because I live alone (3%-N=6).
6. Negative responses related to monetary concerns, such as these new foods are more expensive (2.5%-N=5).
7. Other responses (17.6%-N=35).
8. Negative responses related to four years being too long (5%-N=10).
9. No response (12.6%-N=25).

The single largest category was the positive response geared to a general desire to improve one's health, as opposed to direct cancer prevention.

Preferences for Dietary Modification

Assessment of diet and preference of modification plans yields critical information for planning of future interventions aimed at diet change for colon cancer prevention among this population.

Possible preferences for dietary modification consisted of 11 items to be ranked by the

individual as among the top four preferred plans. Of the four preferred plans, the most preferred was coded "4" and the least preferred "1." Excluded plans were recoded as "0" value. The specific plans and their mean ranks were computed and appear in Appendix D, questions 129-139, and in Appendix A. The highest ranked choice was to eat vegetables every day, and the lowest ranked choice was to add two-thirds cup bran cereal to muffins and eat two every day.

Current Dietary Practices

A battery of 35 items requested that respondents report the frequency of consumption of a variety of foods. Possible choices ranged from 1) "more than once a day" to 8) "rarely or never." Item means, standard deviations, and median values also appear in Appendix D.

As an adjunct to the descriptive analysis, factor analyses were run, applying the criteria noted in the beginning of this section. The factor analysis revealed six separate factors that represented basic dietary categories; however, the inclusion of foods in the dietary battery that contain many ingredients, such as "caldos" (soups) and "licuados" (Mexican equivalent of a milkshake) created a problem in sorting out basic nutritional categories. Factor loadings were difficult to interpret, often a single item would load equally on several factors; some loadings were high and negative.

Furthermore, it was not advisable to sum together all of the items in the factor analysis to create one scale, since the scale score would be difficult to interpret. Aggregating different food groups into one scale does not reveal the composition of one's diet by nutritional categories, thus it is not useful in dietary analyses. Also, as seen by the means and standard deviations of the items, there was wide variation in consumption patterns. Respondents reported very low consumption of several food items, such as alcohol, bran products, "fast foods," and bacon, while reporting high consumption of other food products, such as beef,

vegetables, corn tortillas, and fried foods prepared at home. Aggregation of these items would obscure the variety present in the diet of elderly Mexican Americans.

The reported preference for dietary modifications that appear as a less drastic change in present habits indicates that the interventions used with the parent study's Anglo elderly, i.e. bran muffins, fiber pill supplements, and use of piroxicam will not be effective with this population. Use of bran was one of the most unpopular plans, with increased eatinq of corn tortillas vegetables, and salads among the highest ranked. Clearly, future interventions must take a cautious look at medical interventions that require a break in daily routines, long preparation time or the consumption of foods or medications that are foreign to the Mexican diet, such as bran or pills. There is a clear preference for "natural" sources of fiber, and a dislike for bran or use of fiber pills. Many Mexican American elderly live alone, have low incomes, and are not likely to make major modifications in their diets to accommodate health care educators, hence, it is advisable to consider natural sources of fiber in the Mexican diet and to encourage consumption of these foods when educating Mexican American elderly on the risk factors for colon and other gastrointestinal cancers.

DISCUSSION AND POLICY IMMPLICATIONS

As indicated by the findings of this study, a person's sense of control over his or her health, coupled with lessened barriers to health care are important predictors of preventive self-care. Moreover, less generalized fear about cancer is also important. Apparently, if one's fear of getting cancer is great, he or she may deter examinations and health care that could possibly reveal risk for cancer or incipient cancers.

The importance of utilization barriers to health care and their relationship to preventive health behavior cannot be underestimated for this population. Just as three previous studies

found that barriers to health care (Marks, et al., 1987; Richardson, et al., 1987, and Gonzalez, 1989) were stronger determinants of preventive health care than either age or level of acculturation, this study corroborates that finding. A concerted outreach into the Mexican American community with affordable programs of prevention is necessary. Informed policy making based on theory and its application can facilitate early diagnosis, successful treatment and lower incidence rates for particular diseases.

Further analysis of this data consisting of path analysis will reveal to what extent the HBCP model for Hispanics is an adequate theoretical model for preventive health care behavior for this population. Future research must take a deeper look at motivation for preventive self-care, utilizing a variety of behavioral indicators as measures of preventive self-care. The role of self-efficacy must be reexamined, utilizing a reliable and valid measure. Health locus of control and the health belief model must also be included in future research, in order to replicate or refute the findings of this study.

ENDNOTES

1. Hispanic refers to all Spanish-origin persons residing in the U.S. Mexican American refers to Mexican-origin persons exclusively. Terms are used as they appear in cited works and decision making congruent with the patient's culture (Pender, 1987).

2. Large standard errors relative to estimated coefficients may be due to measurement error as opposed to model estimation error, hence, it is advisable to base decisions about fixing or freeing parameters on the t-values, modification indices, and the theoretical model being tested.

3. Unpublished ethnographic work being done by Mr. Robert Dalgarn, Northern Arizona University, among Tucson Hispanic males indicates that these men employ a decision making system that proceeds from ignoring symptoms to use of home remedies when symptoms persist, to seeking help from female significant others at the point when they perceive a given illness to be uncontrollable. Only when these avenues fail, do they seek medical attention. The definition of an illness as controllable versus uncontrollable seems to be the fulcrum point between two incongruent health belief systems. Whether females use the same system is debateable.

4. Dr. Estrada, of the Rural Health Office, University of Arizona, is currently researching barriers to utilization of health care among elderly Hispanics. His data stems from the Hispanic Health and Nutrition Examination Survey conducted in the Southwest, New York City, and Miami during 1982-84. His analysis focuses on the Mexican American database, although data is now available for Puerto Ricans and Cubans.

5. Acknowledgements for the complete Health Behavior in Cancer prevention questionnaire are as follows: Atwood, Kidd, Benedict, & Sheehan (1987); Atwood, Ho, Sheehan, & Sievers (1985); Finchan & Werthermer (1985); Given, et al. (1983); MacCrae, et al. (1984). Social Support: Krohner, et al. (1986); Tilder (1986). Locus of control: Lau, R.R. & Ware, J.F. (1981) Refinements in the measurement of health-specific locus of control beliefs. Medical Care, 19, 1147-1157. Health behavior scale also adapted by Carolyn Murdaugh, PhD, RN, College of Nursing, University of Arizona, Tucson, Arizona. Knowledge about colon cancer: Ho, Sievers, Abrams, & Atwood (1986). Krohner, et al. (1986); Kidd, Atwood, & Benedict (1987).

6. Internal consistency estimates are not appropriate because items indexing perceived benefits are not parallel, by definition.

7. Source of items: Health Behavior Questionnaire (Atwood, et al., 1987).

8. GLM (general linear models) was employed, since cell sizes between the Spanish and English language subsamples were unequal.

REFERENCES

A study of Hispanics' attitudes concerning cancer and cancer prevention (1985, May). American Cancer Society. Unpublished document.

Anderson, B.G., Toledo, J.R., Hazam, N. (1982). An approach to the resolution of Mexican American resistance to diagnostic and remedial pediatric heart care. In J. Christman and T.W. Maretzki (Eds.) Clinical Applied Anthropology, (pp. 325-350). D. Reidel Publishing Company.

Atwood, J.R. , Ho, E.E. , Sheehan, E., & Sievers, J. (1985). Knowledge about Colon Cancer Questionnaire. Tucson: University of Arizona Cancer Center Instrument.

Atwood, J.R. , Hurd, P. , Sheehan, E. , Ho, E.E. , & Sievers, J. (1985). Theoretical Model Development: Health Behavior in Cancer Prevention Model. Nursing Research, 34 (6): 385.

Atwood, J.R. (1986). Conceptualization: concept development, the progress to quantification. Proceedings of the 3rd Annual Nursing Science Colloquium. 37-66, Boston, Boston University School of Nursing.

Atwood, J.R. , Kidd, P. , Benedict, J., & Sheenan, E. (1987). Revision of health behavior questionnaire. Tucson: University of Arizona Cancer Center Instrument, NCI grant POl CA 41108-0251, 1987-89.

Bandura, A. (1982a). The self and mechanisms of agency. In Jerry Suls (Eds.) Psychological Perspectives on the Self. Lawrence Erlbaum Associates.

Bandura, Alfred (1982b). Self-efficacy mechanism in human agency. American Psychologist, 37 (2), 122-147.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. Psychological Review, 84, 191-215.

Bandura, A., & Adams, N.E. (1977). Analysis of self-efficacy theory of behavioral change. Cognitive Therapy and Research, 1, 287-308.

Bandura, A. , Reese, L., k Adams, N.E. (1982). Microanalysis of action and fear arousal as a function of differential levels of perceived self-efficacy. Journal of Personality and Social Psychology, 43 (1), 5-21.

Bandura, A. , Adams, N.E., Beyer, J. (1977). Cognitive processes mediating behavioral change. Journal of Personality and Social Psychology, 35, 125-139.

Basch, C.E., Gold, R.F., McDermott, R.J., & Richardson, C.E. (1983). Confounding variables in the measurement of cancer patient compliance. Cancer Nursing, 6,4, 285-293.

Becker, Marshall H., & Maiman, Lois A, (1975). Sociobehavioral determinants of compliance with health and medical care recommendations. Medical Care, 13, (1), lO-24.

Becker, M.H., Drachman, R.H., & Kirscht, J.P. (1972). Motivations as predictors of health behavior. Health Services Rep., 87, 852-61.

Becker, Marshall H., Maiman, L.A., Kirscht, J.P., Haefner, D.P., & Drachman, R.H. (1977a). The health belief model and prediction of dietary compliance: A field experiment. Journal of Health and Social Behavior, 18, 348-366.

Belloc, Nedra B., & Breslow, Lester (1972). Relationship of physical health status and health practices. Preventive Medicine, 1, 409-421.

Biran M., & Wilson, G.T. (1981). Cognitive versus behavioral methods in the treatment of phobic disorders: A self-efficacy analysis. Journal of Consulting and ClinicaI Psychology, 886-889.

Bloom, J.R., Ross, R.D., & Burnell, G.M. (1978). Effect of social support on patient adjustment following surgery. Patient Counseling and Health Education, 1:50-59.

Calnan, M.W., & Moss, S. (Eds.) (1984, July). The health belief model and compliance with education given at a class in breast self examination. Journal of Health and Social Behavior, 25, 198-210.

Calnan, M., & Rutter, D.R. (1986). Do health beliefs predict health behavior? An analysis of breast self-examination, Social Science in Medicine. 22, 6, 673-618.

----- (1988). Do health beliefs predict health behavior? A follow-up analysis of breast self-examination. Social Science in Medicine, 26, 4, 463-465.

Carmines, E.G. & Zeller, R.A. (1983). Reliability and Validity Assessment. Sage University Paper Series on Quantitative Applications in the Social Sciences, 07-017. Beverly Hills and London: Sage Publications.

Casavantes, E. (Winter 1970). Pride and prejudice: A Mexican American Dilemma. Civil Rights Digest, 3, 22-27.

Castro, F.G., Furth, P., & Karlon, H. (1984). The health beliefs of Mexican, Mexican Americans and Anglo American women. Hispanic Journal of Behavioral Sciences, 6, 365, 383.

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

Chambliss, C.A., & Murray, E.J. (1979). Efficacy attribution, locus of control and weight loss. Cognitive Therapy and Research, 3(4), 349- 353.

Clark, Martire, & Bartolomeo, Inc. (1985, May). A study of Hispanics' attitudes concerning cancer and cancer prevention. Unpublished report commissioned by the American Cancer Society.

Condiotte, M.M., & Liechtenstein E. (1981), Self-efficacy and relapse in smoking cessation programs. Journal of Consulting Psychology, 49, 648-658.

Copeland, D.R., Silverberg, Y., & Pfefferbaum, B. (Spring 1983). Attitudes and practices of families of children in treatment for cancer: A cross-cultural study. American Journal of Pediatric Hematology and Oncology, 5 (1), 65-71.

Cuellar, I., Harris, L.C,, & Jasso, R. (1980) An acculturation scale for Mexican American normal and clinical populations. Hispanic Journal of Behavioral Science, 2,3, 195-217.

Cummings, K.M., Becker, M,H. &, Maile, M.C. (1980). Bringing the models together: An empirical approach to combining variables used to explain health actions. Journal of Behavioral Medicine, 3 (2), 123-145.

Daly, M.B., Clark, G.M., & McGuire, W.L. (1985, April). Breast cancer prognosis in a mixed Caucasian-Hispanic population: 1971-1982 study data. Journal of the National Cancer Institute, 74 (4), 753-757.

Diamond, M.D., Weiss, A.J., & Grynbaum, E. (1968). The unmotivated patient. Archives of Physical Medicine and Rehabilitation, 49, 281-284.

DiMatteo, M. Robin, & DiNicola, D. Dante (1982). Achieving patient compliance: the psychology of the medical practitioner's role. New York: Pergamon Press.

Eraker, S.A., Kirscht, J.P., & Becker, M.H. (1984). Understanding and improving patient compliance. Annals of Internal Medicine, 100, 258-268.

Estrada, T. (1987, May). Barriers to utilization among Mexican Americans: Evidence from HHANES. Unpublished paper presented at the Arizona/Chicano Conference.

Evans, R.I., Rozelle, R.M., Lasater, T.M., Dembroski, T.M. and Allen, E.P. (1970). Fear arousal, persuasion, and actual versus implied behavioral change. J. Personality and Soc. Psychol., 16, 220-227.

Feltz, D.L., Landers, D.M., & Raeder, V. (1979). Enhancing self-efficacy in high-avoidance motor tasks: A comparison of modeling techniques. Journal of Sport Psychology, 1, 112-122.

Finchan, & Werthermer (1985)

Francis, V., Korsch, E.M., & Morris, M.J. (1963). Gaps in doctor-patient communication. New England Journal of Medicine, 280, 535-40.

Garza, R.T., & Ames, R.E. (1976). A comparison of Chicanos and Anglos on locus of control. In C.A. Hernandez, M.J. Haug, and C. N.N. Wagner (Eds.) Chicanos: Social and Psychological Perspectives. (2nd Ed.). C.V. Mosby.

Gilchrist, L.D., & Schinke, S.P. (1983). Coping with contraception: Cognitive and behavioral methods with adolescents. Cognitive Therapy and Research, 7, (5), 379-388.

Given, B. & Given, C. (1983)

Gonzalez, J. (1987). Efficacy Among Hispanics and Cancer Prevention. Institutional grant funded by the Arizona Cancer Center Small Grants Program, University of Arizona, Tucson, AZ.

Gonzalez, J. (1989). Social support, barriers to utilization, and self-efficacy as predictors of breast self-examination among Mexican American women. Paper to be presented at the 39th Annual Meeting of the Society for the Study of Social Problems, Berkeley, CA, August 6-8, 1989.

Gottlieb, B.H. (1981). Social networks and social support in community mental health. In B.H. Gottlieb (Ed.) Social networks and social support. Beverly Hills: Sage Publications.

Grady, K.E., Kegeles, S.S., Lund, A.K., Wolk, C.H., & Farber, N. J. (Summer 1983). Who volunteers for a breast self-examination? Evaluating the bases for self-selection. Health Education Quarterly, 10, (2), 79-94.

Granovetter, M.S. (1976). The strength of weak ties. American Journal of Sociology, 78: 1360-1380.

Haefner, D.P., & Kirscht, J.P. (1970). Motivational and behavioral effects of modifying health beliefs. Public Health Reports, 82, 478-84.

Haefner, D.P., Kegeles, S.S., Kirscht, J., & Rosenstock, I.M. (1967, May). Preventive actions in dental disease, tuberculosis, and cancer. Public Health Reports, 82 (5), 451-459.

Heinzelmann, Fred & Bagley, Richard W. (1970). Response to physical activity programs and their effects on health behavior. Public Health Reports, 85 (10), 905-911.

Hershey, J.C., Morton, B.G., Davis, J.B., & Reichgold, M.J. (1980). Patient compliance with antihypertensive medication. American Journal of Public Health, 70, 10, 1081-1089.

Hindi-Alexander, & Throm, (1987). Compliance or non-compliance: That is the question: American Journal of Health Promotion, 1, (4):5-11.

Hochbaum, G.M (1958). Public participation in Medical screening programs: A Social psychological study. Public Health Service, Public Health Service Publication No. 572, Washington, United States Government Printing Office.

Hubbard, P., Muhlenkamp, A.F. , & Brown, N. (1984, October). The relationship between social support and self-care practices. Nursing Research, 33(5), 266-270.

Israel, B.A. (1982). Social networks and health status: Linking theory, research and practice. Patient Counseling and Health Education, 4, 65-79.

Janz, N,K., & Becker, M. (1984). The health belief model: A decade later. Health Education Quarterly, 11, 1-47.

Jessor, R., Graves, O.T., Hanson, R.C., & Jessor, S.L. (1968). Society, Personality, and Deviant Behavior. New York: Holt, Rinehart & Winston.

Joreskog, K., & Sorbom, D. (1966). LISREL VI Scientific Software, Inc.

Kalton, G. & Anderson, D.W. (1986). Sampling rare populations. Journal of the Royal Statistical Society. 149, part 1, 65-82.

Kasl, S.V., & Cobb, S. (1986, February). Health behavior, illness behavior and sick role behavior. Archives of Environmental Health I 12, 246-266 and II (1966, April). 12, 534-541.

Keefe, S., Padilla, A., & Carlos, M. (1979). The Mexican American family as an emotional support system. Human Organization, 38, 3, Summer, 144- 152.

Kegeles, S.S. (1963). Some motives for seeking preventive dental care. Journal of the American Dental Association, 67, 90-98.

Kegeles, S.S., & Grady, K.E. (1982). Behavioral dimensions. In D. Schottenfeld & J. Fraumini, J. (Eds) Cancer Epidemiology and Prevention, (pp. 1049-1063). Philadelphia: W.E. Saunders Company.

Kirscht, J.P. & Rosenstock, I.M (1977). Patient adherence to antihypertensive medical regimens. Journal of Community Health, 3: 115-124.

Kluckholn, F.R., & Strodtbeck, F.L. (1961). Variations in Value Orientation. Westport, CT: Greenwood Press.

Krohner, K. & McBurney, (1986)

Lau, R.R. & Ware, J.F. (1981, November). Refinements in the measurement of health-specific locus-of-control beliefs. Medical Care, 19, 1147-1157.

Lau, R.R. (1982). Origins of health locus of control beliefs. Journal of Personality and Social Psychology, 42 (2):322-334.

Mack, T.M., Walker, Ann; Mack, Wendy, & Bernstein, Leslie (1985). Cancer in Hispanics in Los Angeles County. National Cancer Institute Monograph 69, 99-104.

Macrae, F.A., Hill, D.J., St. John, K.J.E., Ambikapathy, A., Garner, J.R., & the Ballarat General Practitioner Research Group (1984). Predicting colon cancer screening behavior from health beliefs. Preventive Medicine, 13, 115-126.

Maiman, L.A., Becker, M.H., Kirsctt, J.P., Haefner, D.P., & Drachman, R.H. (1977). Scales for measuring health belief model dimensions: A test of predictive value, internal consistency, and relationships among beliefs. Health Education Monographs, 5 (3), 215-230.

Marin, B.V.O., Marin, G., Padilla, A., & de la Rocha, C. (1983). Utilization of traditional and non-traditional sources of health care among Hispanics. Hispanic Journal of Behavioral Sciences 5, 1, 65-80.

Marks, G., Solis, J., Richardson, J.L., Collins, L.M., Birba, L., & Hisserich, J.C. (1987). Health behavior of elderly Hispanic women: Does culture assimilation make a difference. American Journal of Public Health, 77,(10), 1315-1319.

Marsh, W.W., & Perlman, L.V. (1972). Understanding congestive heart failure and self-administration of digoxin. Geriatrics, 27, 65-70.

McKinlay, J.E. (1972). Some approaches and problems in the study of the use of services: An overview. Journal of Health and Social Behavior, 13, 115-152.

McKinlay, J.B. (1973), Social networks, law consultation, and help-seeking behavior. Social Forces, 51, 275-295.

Mirowsky, J., & Ross, C.E. Mexican culture and its emotional contradictions. (1984, March). Journal of Health and Social Behavior, 25, 2-13.

Montano, D.E. (1983). Compliance with health care recommendations: A reassessment of the health belief model. Dissertation Abstracts International, 44, (4-B) 1281-1282.

Murdaugh, Carolyn L. (1982). Instrument development in preventive behaviors for CAD. Dissertation Abstracts International, 43(3), 680b.

Neely, E., & Patrick M.L. (1968). Problems of aged persons taking medications at home, Nursing Research, 17, 52-55.

Nunnally, J.C. (1978). Psychometric Theory. McGraw-Hill Series in Psychology. New-York:McGraw-Hill book Co.

O'Leary, A. (1985). Self-efficacy and health. Behavioral Research and Therapy, 23, (4), 437-451.

Pender, N.J. (1987). Health Promotion in Nursing Practice. Connecticut: Appleton-Century-Croft.

Proceedings Summary of the Hispanic Cancer Control Program Workshop, National Cancer Institute, Division of Cancer Prevention and Control. (April 17-18, 1986).

Richardson, J.L., Marks, G., Solis, J.M., Collins, L.M., Birba, L., & Hisserich, J.C. (1987). Frequency and adequacy of breast cancer screening among elderly Hispanic women. Preventive Medicine, 16, 761- 774.

Rosenstock, I.M. (1974). Historical origins of health belief model. Health Education Monographs, 2 (4), 328-335.

Rotter, Julian B. (1954). Social Learning and Clinical Psychology. New York: Prentice-Hall.

Sackett, Davis L. & Haynes, R. Brian. (1976). Compliance With Therapeutic Regimens. Baltimore: The John Hopkins University Press.

Samet, Jonathan M. , Rey, Charles R., Hunt, William C., & Goodwin, James S. (1987, September). Survival of American Indian and Hispanic cancer patients in New Mexico and Arizona, 1969-82. Journal of the National Cancer Institute, 79 (3), 457-463.

Savitz, D. (1986, October). Changes in Spanish surname cancer rates relative to other whites, Denver area, 1969-1971 to 1979-81. American Journal of Public Health, 76 (10), 1210-1215.

Simon, K.M. (1979). Self-evaluative reactions; The role of personal validation of the activity. Cognitive Therapy and Research, 3 (lA), 111-116.

Solis, Julie, Richardson, J., & Hisserich, J.C. et al. (1985, November). Cancer screening among elderly Hispanic women. Paper presented at the Second International Conference on Cancer.

Suchman, E.A. (1967) Preventive health behavior: A model for research in community health campaigns. J. Health Soc. Behav., 8, 197-209.

Tilden, V.P. (1986)

Tilden, V.P. & Gaylen, R.D. (1987). Cost and conflict: The darker side of social support. Western Journal of Nursing Research, 9, 1:9-18.

Watkins, J.D., Williams, T.F., Martin, D.A., Hogan, M.D., & Anderson, E. (1967). A study of diabetic patients at home. American Journal of Public Health, 57, 452-59.

Watts, R.J. (1982). Sexual functioning, health beliefs, and compliance with high blood pressure medications. Nursing Research, 31, 5, 178-183.

Appendix A

DESCRIPTIVE STATISTICS FOR MAJOR MODEL VARIABLES

Variable	N	Mean	S.D	Var.
PREV SELF-CARE	195	4.397	1.421	2.018
AGE	199	64.281	9.038	81.688
ETHNIC SELF-ID	199	1.633	0.637	0.405
SCHOOLING	199	7.894	4.283	18.347
BENEFITS 1	199	4.477	1.105	1.220
BENEFITS 2	199	1.221	0.660	0.436
OCCUPATION	147	2.517	1.218	1.484
SPOUSES' OCCUPATION	167	2.533	1.196	1.431
LANG. PREFER	193	16.601	7.166	51.345
GEN. H THREAT	199	16.864	6.870	47.199
HLOC-(PROVIDER)	199	8.467	4.657	21.685
HLOC (CHANCE)	199	16.000	4.592	21.091
SEVERITY	199	14.256	6.336	40.141
BARRIERS	199	11.879	5.807	33.723
SUSCEPTIBIL.	199	19.472	4.264	18.180
KNOWLEOGE	199	29.884	8.582	73.647
SOCIAL SUPP.	199	13.990	6.764	45.757
INCOME	185	2.654	1.577	2.488

MEAN RANKINGS OF PREFERRED DIETARY MODIFICATIONS

Variable	N	Mean	S.D	Var.
WW TORT.	199	0.513	1.136	1.292
CORN TORT.	199	1.367	1.627	2.648
LICUADOS	199	1.131	1.495	2.235
SALADS	199	2.005	1.549	2.399
VEGETABLE	199	2.171	1.360	1.849
FIB. PILL	199	0.556	1.139	1.298
COOKIES	199	0.221	0.733	0.537
ROLLS	199	0.146	0.581	0.337
BRAN MUFF	199	0.070	0.383	0.147
BRAN CER.	199	0.889	1.317	1.735
OTHERS	199	0.548	1.023	1.047

Appendix B

FACTOR ANALYSIS OF MAJOR MODEL CONSTRUCTS

Table 1

Factor Analysis of Health Locus of Control Construct
Provider Control (One factor)

Item	Item Mean	S.D.	Factor Loading	Communality
1	1.36	1.12	.72	.52
2	1.74	1.43	.69	.49
3	1.64	1.29	.74	.54
4	1.88	1.53	.65	.43
5	1.88	1.55	.59	.35
Eigenval	2.31	% Variance	46%	

Table 2

Factor Analysis of Health Locus of Control Construct
Chance Control (One factor)

Item	Item Mean	S.D.	Factor Loading	Communality
1	3.94	1.70	.71	.50
2	4.41	1.31	.71	.50
3	3.94	1.68	.71	.50
4	3.65	1.74	.75	.57
Eigenval	2.07	% Variance	52%	

Table 3

Factor Analysis of Utilization Barriers Construct (Two factors)

Item	Item Mean	S.D.	Factor Loading	Factor Loading
1	2.01	1.51	----	.87
2	2.10	1.53	----	.81
3	2.52	1.79	.80	----
4	1.92	1.48	.87	----
5	2.08	1.65	.81	----
6	1.27	0.80	----	.46
Eigenval	2.55	% Variance	42.4%	
Eigenval	1.24	% Variance	20.6%	
Cum. Variance		63%		

Table 4

Factor Analysis of Health Threat Construct
Susceptibility Construct (Two factors)

Item	Item Mean	S.D.	Fact. 1 Loading	Fact. 2 Loading
1	3.47	1.38	.83	-----
2	3.84	1.17	.76	-----
3	4.23	1.27	.37	.65
4	3.96	1.23	.66	.5O*
5	3.98	1.35	-----	.89
Eigenval	2.30	% Variance	46%	
Eigenval	1.01	% Variance	20%	
Cum. Variance		66%		

*While the difference between the two loadings is less than .20, removal of item 4 would have resulted in reduction of Alpha to .56, rendering the scale unacceptable. Further analysis is necessary to determine if the scale can be considered valid and reliable.

Table 5

Factor Analysis of Health Threat Construct
Severity Construct (One Factor)

Item	Item Mean	S.D.	Factor Loading	Communality
1	2.10	1.53	.67	.45
2	2.18	1.55	.72	.53
3	3.23	1.77	.54	.29
4	2.73	1.71	.70	.49
5	2.03	1.41	.78	.60
6	1.96	1.53	.61	.37
Eigenval	2.74	% Variance	46%	

Table 6

Factor Analysis of Health Threat Construct General Health Threat Construct
(One factor)

Item	Item Mean	S.D.	Factor Loading	Communality
1	3.50	1.92	.83	.70
2	2.73	1.94	.82	.68
3	4.15	1.31	.37	.14
4	2.89	1.98	.87	.75
5	3.59	1.89	.79	.62
Eigenval	2.88	% Variance	57.6%	

Table 7

Factor Analysis of Knowledge Construct
(Two Factors)

Item	Item mean	S.D.	Factor 1 loading	Factor 2 Loading
1	3.22	1.99	.72	-----
2	3.84	1.82	.8O	-----
3	4.03	1.82	.87	-----
4	3.87	1.80	.47	-----
5	3.71	1.88	-----	.64
6	3.44	1.96	.56	-----
7	3.00	0.96	-----	.72
8	4.76	0.95	-----	.69
Eigenval	2.95	% Variance	37%	
Eigenval	1.15	% Variance	14%	
Cum. Variance		51%		

Table 8

Factor Analysis of Social Support Coastruct
(Two Factors)

Item	Item mean	S.D.	Factor 1 loading	Factor 2 loading
1	1.70	1.40	.71	-----
2	2.22	1.75	-----	.77
3	1.89	1.51	.75	-----
4	1.40	1.08	.58	-----
5	1.72	1.48	.68	-----
6	1.44	1.21	-----	.75
7	1.72	1.38	.54	-----
8	1.88	1.60	.62	.30*
Eigenval	2.87	%Variance	36%	
Eigenval	1.05	%Variance	13%	
Cum. variance		49%		

Table 9

Factor Analysis of Language Preference Construct (One factor)

Item	Item mean	S.D.	Factor Loading	Communality
1	3.50	1.64	.89	.8O
2	3.21	1.75	.93	.87
3	3.76	1.50	.92	.84
4	3.54	1.67	.94	.88
5	2.43	1.11	.96	.91
Eigenval	4.31	% Variance	86%	

APPENDIX C* MULTIPLE REGRESSION PREDICTORS OF PREVENTIVE SELF-CARE (STAGE 5)

Dependent variable: PREVENTIVE SELF-CARE

Method is forward stepwise regression with F-to-enter=1, F-to-remove=1.

Step 1 Variable entered: ENVIRONMENTAL BARRIERS TO UTILIZATI@N OF HEALTH CARE (BARRIERS)

Multiple R	0.2120
R-Square	0.0450
Adjusted R-Square	0.0384
Standara Error	1.4110

Analysis of variance

Source	DF	SS	MSS	F	P
Regression	1	13.587	13.587	6.825	0.0099
Residual	145	288.671	1.991		

Variables in the model

Variable	B	Beta	Std. Error	F-to-Remove	P-Value
BARRIERS	-0.05054	-0.01202	0.0193	6.825	0.0099
Const.	5.02602				

Variable	Partial Corr.	Tolerance	F-TO-Enter
OCCUP	0.04884	0.963	0.344
HLOC (CHANCE)	-0.12243	0.998	2.191
HEALTH THREAT (GEN)	0.10501	0.955	1.606
SUSCEPT.	0.02601	0.900	0.097
SEVERITY	0.01920	0.941	0.053

Step 2 Variable entered: HLOCC (HEALTH LOCUS OF CONTROL-CHANCE)

Multiple R	0.2435
R-Square	0.0593
Adjusted R-Square	0.0462
Standara Error	1.4052

Analysis of variance

Source	DF	SS	MSS	F	P
Regression	2	17.914	8.957	4.536	0.0112
Residual	144	284.344	1.975		

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*Each variable has an acronym as follows: 1)HTGEN=HEALTH THREAT/GENERAL, 2) SS=SOCIAL SUPPORT, 3)KNOW=KNOWLEDGE OF COLON CANCER, 4)HLOCC=HEALTH LOCUS OF CONTROL/CHANCE CONTROL, 5)IDEN=ETHNIC SELF-IDENTIFICATION, 6) OCCUP=OCCUPATION.

Variables in the model

Variable	B	Beta	Std. Error	F-to-Remove	P-Value
BARRIERS	-0.04919	-0.20635	0.01929	6.503	0.0118
HLOCC	-0.03884	-0.11978	0.02624	2.191	0.1410
Const.	5.64665				

Variables not in the model

Variable	Partial Corr.	Tolerance	F-to-Enter
OCCUP	0.04607	0.963	0.304
HTGEN.	0.11868	0.945	2.043
SUSCEPT	0.03558	0.895	0.181
SEVERITY	0.02790	0.937	0.111

Dependent variable: PREVENTIVE SELF-CARE

Step 3 variable entered: HEALTH THREAT GENERAL (HTGEN)

Multiple R	0.2693
R-Square	0.0725
Adjusted R-Square	0.0531
Standard Error	1.4001

Analysis of variance

Source	DF	SS	MSS	F	P
Regression	3	21.913	7.306	3.727	0.0127
Residual	143	280.339	1.960		

Variables in the model

Variance	B	Beta	Std. Error	F-to-Remove	P-Value
BARRIERS	-0.04304	-0.18055	0.01970	4.775	0.0305
HLOCC	-0.04258	-0.13132	0.02627	7.626	0.1073
HTGEN	0.02467	0.11841	0.01716	2.043	0.1551
Const.	5.21299				

Variables not in the model

Variable	Partial Corr.	Tolerance	F-to-Enter
OCCUP	0.04418	0.962	0.278
SUSCEPT	-0.01904	0.720	0.052
SEVERITY	-0.03685	0.701	0.193

Appendix C (CONT)

Predictors of General Health Threat/(Stage 4)

Dependent variable: HEALTH THREAT GENERAL (HTGEN)

Step 1 variable entered: BARRIERS

Multiple R	0.2108
R-Square	0.0444
Adjusted R-Square	0.0396
Standard Error	6.7328

Analysis of variance

Source	DF	SS	MSS	F	P
Regression	1	415.311	415.311	9.162	0.0028
Residual	197	8930.025	45.330		

Variables in the model

Variable	B	Beta	Std. Error	F-to-Remove	F-Value
BARRIERS	-0.24940	-0.21081	0.08239	9.162	0.0028
Const.	19.82702				

PREDICTORS OF GENERAL HEALTH THREAT (STAGE 4)

Dependent variable: GENERAL HEALTH THREAT (HTGEN)

Step 1 Variable entered: BARRIERS

Multiple R	0.2108
R-Square	0.0444
Adjusted R-Square	0.0396
Standard Error	6.7328

Analysis of variance

Source	DF	SS	MSS	F	P
Regression	1	415.311	415.311	9.161	0.0028
Residual	197	8930.025	45.330		

Variables in the model

Variable	B	Beta	Std. Error	F-to-Remove	P-Value
BARRIERS	-0.24940	-0.21081	0.08239	9.162	0.0028
Const.	19.82702				

PREDICTORS OF SUSCEPTIBILITY (STAGE 4)

Dependent variable: Susceptibility to Colon Cancer (SUS)

Step 1 Variable entered: ETHNIC SELF-IDENTIFICATION (IDEN)

Multiple R	0.3553
R-Square	0.1263
Adjusted R-Square	0.1190
Standard Error	4.1609

Analysis of variance

Source	DF	SS	MSS	F	P
Regression	1	300.238	300.238	17.341	0.0001
Residual	120	2077.598	17.313		

Variables in the model

Variable	B	Beta	Std. Error	F-to-Remove	P-Value
IDEN	2.50678	0.35534	0.60197	17.341	0.0001
Const.	15.17293				

Variables not in the model

Variable	Partial Corr.	Tolerance	F-to-Enter
KNOW	0.03816	0.869	0.174
BARRIERS	-0.31146	0.967	12.784
SPOUSE OCCP.	0.14943	0.942	2.718
OCCUP	0.07110	0.912	0.605
SCHOOL	0.16863	0.847	3.483

Step 2 Variable entered: BARRIERS

Multiple R	0.4594
R-Square	0.2110
Aajusted R-Square	0.1978
Standard Error	3.9705

Analysis of variance

Source	DF	SS	MSS	F	P
Regression	2	501.776	250.888	15.914	0.0000
Residual	119	1876.060	15.765		

Variables in the model

Variable	B	Beta	std. Error	F-to-Remove	P-Value
IDEN	2.12858	0.30173	0.58408	13.281	0.0004
BARRIERS	-0.21600	-0.29603	0.06041	12.784	0.0005
Const.	18.26853				

Variables not in the model

Variable	Partial Corr.	Tolerance	F-to-Enter
KNOW	0.00290	0.858	0.001
SPOUSE OCCP.	0.07781	0.883	0.719
OCCUP.	0.02398	0.890	0.068
SCHOOL	0.10580	0.803	1.336

Dependent variable: SUSCEPTIBILITY TO COLON CANCER

Method is forward stepwise regression with F-to-enter=1, F-to-remove=1.

Step 3 Variable entered: SCHOOL

Multiple R	0.4689
R-Square	0.2199
Adjusted R-Square	0.2000
Standard Error	3.9650

Analysis of variance

Source	DF	SS	MSS	F	P
Regression	3	522.777	174.259	11.085	0.0000
Residual	118	1850.059	15.721		

Variables in the model

Variable	B	Beta	sta. Error	F-to-Remove	F-Value
IDEN	1.86729	0.26469	0.62554	8.911	0.0035
BARRIERS	-0.19974	-0.27375	0.06194	10.398	0.0016
SCHOOL	0.11394	0.10488	0.09858	1.336	0.2501
Const.	17.55866				

Variables not in the model

Variable	Partial Corr.	Tolerance	F-to-Enter
KNOWLEDGE	-0.03193	0.774	0.119
SPOUSE OCCP.	0.04552	0.786	0.243
OCCUP.	-0.02859	0.698	0.096

PREDICTORS OF HEALTH LOCUS OF CONTROL (STAGE 4)

Dependent variable: Health Locus of Control-Chance Control(HLOCC)

Method is forward stepwise regression with F-to-enter=1, F-to-remove=1.

Step 1 Variable entered: SCHOOL

Multiple R	0.1802
R-Square	0.0325
Adjusted R-Square	0.0276
Standard Error	4.5287

Analysis of variance

Source	DF	SS	MSS	F	P
Regression	1	135.655	135.655	6.614	0.0108
Residual	197	4040.345	20.509		

Variables in the model

Variable	B	Beta	Std. Error	F-to-Remove	P-Value
SCHOOL	0.19324	0.18023	0.07514	6.614	0.0108
Const.	14.47447				

Variables not in the model

Variable	Partial Corr.	Tolerance	F-to-Enter
SOCIAL SUP.	-0.15552	0.984	4.858
AGE	-0.08910	0.876	1.568

Step 2 Variable entered: SOCIAL SUPPORT (SS)

Multiple R	0.2364
R-Square	0.0559
Adjusted R-Square	0.0463
Standard Error	4.4850

Analysis of variance

Source	DF	SS	MSS	F	P
Regression	2	233.382	116.691	5.801	0.0035
Residual	196	3942.618	20.115		

Variables in the model

Variable	B	Beta	Std. Error	F-to-Remove	F-Value
SCHOOL	0.17260	0.16039	0.07500	5.296	0.0224
SS	-0.00468	-0.15418	0.04749	4.858	0.0287
Const.	16.10183				

Variables not in the model

Variable	Partial Corr.	Tolerance	F-to-Enter
AGE	-0.09117	0.876	1.635

Dependent Variable: HLOCC

Step 3 Variable entered: AGE

Multiple R	0.2525
R-Square	0.0637
Adjusted R-Square	0.0493
Standard Error	4.4778

Analysis of variance

Source	DF	SS	MSS	F	P
Regression	3	266.156	88.715	4.425	0.0049
Residual	195	3909.844	20.050		

Variables in the model

Variable	B	Beta	Std. Error	F-to-Remove	P-Value
SCHOOL	0.13676	0.12756	0.07995	2.926	0.0888
SOC.SUPPORT	-0.10506	-0.15474	0.04742	4.909	0.0279
AGE	-0.04810	-0.09466	0.03762	1.635	0.2026
Const.	19.48203				

PREDICTORS OF SEVERITY (STAGE 4)

Method is forward stepwise regression with F-to-enter=1. F-to-remove=1.

Step 1 Variable entered: BARRIERS

Multiple R	0.2421
R-Square	0.0586
Aajusted R-Square	0.0521
Standard Error	6.4587

Analysis of variance

Source	DF	SS	MSS	F	P
Regression	1	376.746	376.746	9.032	0.0031
Residual	145	6048.575	41.714		

Variables in the model

Variable	B	Beta	Std. Error	F-to-Remove	P-Value
BARRIERS	-0.26616	-0.24215	0.08856	9.032	0.0031
Const.	17.47572				

Variables not in the model

Variable	Partial Corr.	Tolerance	F-to-Enter
KNOW	0.19534	0.987	5.713
OCCUP	0.11721	0.963	2.006

Step 2 Variable entered: KNOWLEDGE OF COLON CANCER

Multiple R	0.3075
R-Square	0.0946
Adjusted R-Square	0.0820
Standard Error	6.3562

Analysis of variance

Source	DF	35	MSS	F	P
Regression	2	607.542	303.771	7.519	0.0008
Residual	144	5817.778	40.401		

Variables in the model

Variable	B	Beta	std. Error	F-to-Remove	P-Value
BARRIERS	-0.24254	-0.22066	0.08772	7.645	0.0064
KNOWLEDGE	0.15374	0.19074	0.06432	5.713	0.0181
Const.	12.50927				

Variables not in the model

Variable	Partial Corr.	Tolerance	F-to-Enter
OCCUP	0.05150	0.839	0.380

No further variables can be entered or removed.

PREDICTORS OF KNOWLEDGE OF COLON CANCER (STAGE 3)

Step 1 Variable entered: SCHOOL

Multiple R	0.4232
R-Square	0.1791
Adjusted R-Square	0.1722
Standard Error	7.4727

Analysis of variance

Source	DF	SS	MSS	F	P
Regression	1	1461.730	1461.730	26.177	0.0000
Residual	120	6700.892	55.841		

Variables in the model

Variable	B	Beta	Std. Error	F-to-Remove	P-Value
SCHOOL	0.85182	0.42317	0.16649	26.177	0.0000
Const.	23.51359				

Variables not in the model

Variable	Partial Corr.	Tolerance	F-to-Enter
ETHNIC			
SELF-IDENT	0.23511	0.847	6.963
SPOUSE'S			
OCCUP	0.07670	0.820	0.704
OCCUPATION	0.16151	0.709	3.187

Step 2 Variable entered: ETHNIC SELF-IDENTIFICATION (IDEN)

Multiple R	0.4738
R-Square	0.2245
Adjusted R-Square	0.2114
Standard Error	7.2937

Analysis of variance

Source	DF	SS	MSS	F	P
Regression	2	1832.131	916.065	17.220	0.0000
Resiaual	119	6330.491	53.197		

Variables in the model

Variable	B	Beta	Std. Error	F-to-Remove	P-Value
SCHOOL	0.66932	0.33251	0.17661	14.363	0.0003
IDEN	3.02603	0.23151	1.14673	6.963	0.0094
Const.	19.93058				

Variables not in the model

Variable	Partial Corr.	Tolerance	F-to-Enter
SPOUSE OCCUP	0.05753	0.813	0.392
OCCUPATION	0.14056	0.700	2.378

Step 3 variable entered: OCCUPATION

Multiple R	0.4897
R-Square	0.2398
Adjusted R-Square	0.2204
Standard Error	7.2518

Analysis of variance

Source	DF	SS	MSS	F	P
Regression	3	1957.201	652.400	12.406	0.0000
Residual	118	6205.421	52.588		

Variables in the model

Variable	B	Beta	Std. Error	F-to-Remove	F-Value
SCHOOL	0.52020	0.25843	0.20046	6.734	0.0106
IDEN	2.83256	0.21671	1.14708	6.098	0.0150
OCCUP	0.99052	0.14795	0.64229	2.378	0.1257
Const.	18.99319				

Variables not in the model

Variable	Partial Corr.	Tolerance	F-to-Enter
SPOUSE'S OCCUP.	0.01785	0.746	0.037

No further variables can be entered or removed.

PREDICTORS OF BARRIERS TO HEALTH CARE (STAGE 2)

Step 1 Variable entered: SPOUSES' OCCUPATION

Multiple R	0.2821
R-Square	0.0796
Adjusted R-Square	0.0719
Standard Error	5.8528

Analysis of variance

Source	DF	SS	MSS	F	P
Regression	1	355.522	355.522	10.379	0.0017
Residual	120	4110.610	34.255		

Variables in the model

Variable	E	Beta	sta. Error	F-to-Remove	P-Value
SPOUSE OCCUP.	-1.36799	-0.28214	0.42463	10.379	0.0017
Const.	14.87035				

Variable	Partial Corr.	Tolerance	F-to-Enter
AGE	-0.28869	0.992	10.820
SCHOOL	-0.18033	0.820	4.000
OCCUP.	-0.08418	0.793	0.849
SS	0.05199	0.981	0.323

Step 2 Variable entered: AGE

Multiple R	0.3954
R-Square	0.1563
Adjusted R-Square	0.1421
Standard Error	5.6271

Analysis of variance

Source	DF	SS	MSS	F	P
Regression	2	698.118	349.059	11.024	0.0000
Residual	119	3768.013	31.664		

Variables not in the model at this step

Variable	B	Beta Std. Error	F-to-Remove	P-Value
SPOUSE OCCUP.	-1.48901	-0.30710 0.40991	13.195	0.0004
AGE	-0.19432	-0.27809 0.05998	10.820	0.0013
Const.	27.45476			

Variable	Partial Corr.	Tolerance	F-to-Enter
SCHOOL	-0.25279	0.788	8.055
OCCUP	-0.09705	0.793	1.122
SS	0.06807	0.979	0.549

Step 3 Variable entered: SCHOOL

Multiple R	0.4585
R-Square	0.2102
Adjusted R-Square	0.1901
Standard Error	5.4673

Analysis of variance

Source	DF	SS	MSS	F	P
Regression	3	938.903	312.968	10.470	0.0000
Residual	118	3527.228	29.892		

Variables in the model

Variable	B	Beta	Std. Error	F-to-Remove	P-Value
SPOUSE OCCUP	-0.97129	-0.20032	0.43806	4.916	0.0285
AGE	-0.22709	-0.32499	0.05855	15.044	0.0002
SCHOOL	-0.38945	-0.26156	0.13722	8.055	0.0053
Const.	31.50696				

Variables not in the model

Variable	Partial Corr.	Tolerance	F-to-Enter
OCCUP	0.01423	0.644	0.024
SS	0.04430	0.969	0.230

Dependent variable: SOCIAL SUPPORT (STAGE 2)

Step 1 Variable entered: SCHOOL

Multiple R	0.1543
R-Square	0.0238
Adjusted R-Square	0.0157
Standard Error	7.0834

Analysis of variance

Source	DF	SS	MSS	F	P
Regression	1	146.903	146.903	2.928	0.0897
Residual	120	6020.966	50.175		

Variables in the model

Variable	B	Beta	Std. Error	F-to-Remove	P-Value
SCHOOL	-0.27004	-0.15433	0.15782	2.928	0.0897
Const.	16.26257				

Variables not in the model

Variable	Partial Corr.	Tolerance	F-to-Enter
AGE	0.02461	0.953	0.072
OCCUP	0.03691	0.709	0.162
SPOUSES OCCUP-	0.07936	0.820	0.754
IDEN	0.17345	0.847	3.691
CITIZEN	0.22559	0.823	6.381

Step 2 Variable entered: CITIZEN (U.S. BORN VS. BORN IN MEXICO)

Multiple R	0.2711
R-Square	0.0735
Adjusted R-Square	0.0579
Standard Error	6.9297

Analysis of variance

Source	DF	SS	MSS	F	P
Regression	2	453.328	226.664	4.720	0.0106
Residual	119	5714.541	48.021		

Variables in the model

Variable	B	Beta	Std. Error	F-to-Remove	P-Value
SCHOOL	-0.45070	-0.25757	0.17015	7.016	0.0092
CITIZEN	3.67605	0.24564	1.45525	6.381	0.0128
Const.	11.71157				

Variables not in the model

Variable	Partial Corr.	Tolerance	F-to-Enter
AGE	-0.00680	0.935	0.005
OCCUP	0.01082	0.699	0.014
SPOUSES OCCUP	-0.07700	0.820	0.704
IDEN	0.07799	0.658	0.722

APPENDIX D

ADDING FIBER TO THE DIET

Doctors are now researching the effects of a high fiber, low fat diet on colon cancer prevention. Your ideas on the best way to change our diet will contribute much to cancer prevention research. From the list below, please let me know, in order of your preference, which you would be willing to add to your diet?

105.	Eat more wheat tortillas	YES	NO
106.	Eat more corn tortillas	YES	NO
107.	Prepare and drink "licuados" made from fruit daily	YES	NO
108.	Eat salads daily	YES	NO
109.	Eat vegetables every day	YES	NO
110.	Taking two fiber pills daily (Metamucil in capsule form)	YES	NO
111.	Eating two high fiber cookies daily (5" diameter, 50 cals. each)	YES	NO
112.	Eat two high fiber rolls (50 cals. each, daily)	YES	NO
113.	Add 2/3 cup bran cereal to muffins and eat two daily	YES	NO
114.	Eat bran cereal (Like All Bran or similar) with milk	YES	NO
115.	Add more fiber from other sources which would be taught to you by a dietary specialist	YES	NO

Now, tell me which would you be most willing to do for at least four years?

116.	Eat whole wheat tortillas	YES	NO
117.	Eat more corn tortillas	YES	NO
118.	Prepare and drink "licuados" made from fruit daily	YES	NO
119.	Eat salads every day	YES	NO
120.	Eat vegetables every day	YES	NO

121. Taking two fiber pills daily (Metamucil in capsule form) YES NO

122. Eating two high fiber cookies daily (5" diameter, 50 cals. each) YES NO

123. Eat two high fiber rolls daily (50 cals. each) YES NO

124. Add 2/3 cup bran cereal to muffins and eat two daily YES NO

125. Eat bran cereal (like All Bran or similar) with milk YES NO

126. Add more fiber from other sources which would be taught to you by a dietary specialist YES NO

127. Do you think you could follow one of these plans for four years? (Outcome variable of preventive self-care).

1. Yes
2. Don't know/maybe
3. No

128. Why do you think you could/could not follow one of these plans? (Percentage breakdown of responses is included in text of the final report).

Let's imagine that the doctor has suggested a change in your current diet and you **have** to select some of these plans. In which order would you prefer them? Select only your first 4 options.

	Dietary Modification Choices	**Mean Rank Score**	**Ranked Preference**
129.	Eat whole wheat tortillas	0.51	8
130.	Eat more corn tortillas	1.37	3
131.	Prepare and drink "licuados" made from fruit daily	1.13	4
132.	Eat salads every day	2.01	2
133.	Eat vegetables every day	2.17	1
134.	Taking two fiber pills daily (Metamucil in capsule form)	0.56	6
135.	Eating two high fiber cookies daily (5" diameter, 50 cals ea.)	0.22	9
136.	Eat two high fiber rolls (50 cals. each) daily	0.15	10
137.	Add 2/3 cup bran cereal to muffins and eat two daily	0.07	11
138.	Eat bran cereal (like All Bran or similar) with milk	0.89	5
139.	Add more fiber from other sources which would be taught to you by a dietary specialist	0.55	7

DIETARY PRACTICES

For the following foods that I will read you, please let me know how frequently do you consume each:

Response categories:

1. More than once a day.
2. Once a day.
3. 4-6 times per week.
4. 2-3 times per week.
5. Once a week.
6. 1-3 times per month.
7. Less than once a month.
8. Rarely or never.

DIETARY CHOICES	Mean Freq.	Median	S.D.
Hamburgers from a "fast food" restaurant	7.14	8	1.08
French fries	7.01	8	1.24
Fried foods-"fast food" restaurant	7.13	8	1.13
Other fried foods prepared at home Specify fat used_____	4.61	5	2.16
Beef	4.48	4	1.68
Charcoal broiled beef (carne a la parrilla)	6.47	7	1.45
Beer (12 oz. cans) # ea. time_____	7.39	8	1.44
Other alcoholic beverages Specify_____	7.75	8	0.82
Smoked ham	7.26	8	1.29
Bacon	6.60	7	1.49
Fish	5.56	5	1.48
Cabbage	5.60	6	1.65
Spinach and other green leaves	4.99	5	1.96
Carrots	4.03	4	1.59
Broccoli, cauliflower, brussels sprouts	4.81	5	1.78
Tomatoes	3.16	3	1.54

Zucchini	4.53	4	1.42
Corn	5.16	5	1.43
Onion	3.08	2	1.86
Lettuce	3.23	3	1.63
Chile	4.65	4	2.65
Fruits	2.29	2	1.26
Bran cereal	5.48	5	2.30
Whole wheat cereal	5.70	5	2.05
Oats	4.91	5	1.98
Corn tortillas	4.36	4	1.96
Flour tortillas	5.89	6.5	2.27
Whole wheat bread	4.21	4	2.30
Beans (lima, kidney, black-eyed, lentils, etc.)	3.84	4	2.08
"Licuados" (milkshakes w/fruits added)	6.67	8	1.98
Whole milk	4.90	4	2.91
Cheese	3.38	3	1.53
"Caldos". Specify ingredients:	5.28	5	1.55

Cooked with, or ate a meal prepared with lard	7.03	8	1.95

Do you add salt to your meals? 1) YES 2) NO 3) SOMETIMES

2.04 2 0.66

What kinds of foods do you add salt to? (open-ended question)

_____

_____

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