

ACCULTURATION, HEALTH LOCUS OF CONTROL, AND SMOKING TOBACCO IN
CUBAN-AMERICAN, PUERTO RICAN AND MEXICAN-AMERICAN YOUTH IN THE
UNITED STATES

by

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(Under the Direction of Lynda Henley Walters)

ABSTRACT

The purpose of the proposed study is to examine the relation between acculturation strategy, health locus of control, and smoking tobacco among ethnic subgroups of Hispanic youth in the United States. The sample includes 213 Cuban-American, 1350 Mexican-American, and 632 Puerto Rican adolescents 12-19 years of age. The data are collected as part of a national Hispanic Health and Nutrition Examination Survey (HHANES) conducted from 1982 to 1984. Analysis is conducted to assess whether smoking tobacco can be accurately predicted by acculturation strategy and/or health locus of control.

INDEX WORDS: Acculturation strategy, Health locus of control, Smoking tobacco,
Hispanic ethnic subgroups, Hispanic adolescents

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CHAPTER 1

INTRODUCTION

Smoking tobacco is a major health problem in the United States. Smoking-related diseases claim an estimated 419,000 lives each year. Smoking tobacco costs the United States approximately \$97.2 billion each year in health costs and lost productivity (Elder J.P., 1994). There has been increased attention focused on adolescent's smoking tobacco because of a growing awareness of the thousands of adolescents per day who are becoming regular smokers (Atav & Spencer, 2002). The first cigarette smoking usually occurs before high school graduation (Giovino et al., 1999; Smoking facts, 2000). The data provided by the National Youth Tobacco Surveillance conducted by the Centers for Disease Control (CDC, 2000) showed that 36 % of Middle school students nationwide had ever smoked cigarettes. In high schools nationally, 64% of students had ever smoked cigarettes.

It is well documented that there are ethnic differences in age of initiation and rate of smoking tobacco. Whites and Hispanic Americans show significantly higher levels of initiation and current smoking than African and Asian Americans (Bachman, Wallace & O'Malley, 1991; Kahn, Warren & Collins, 1993; McDermott, Sarvela & Hoalt, 1992).

According to data from the Robert Wood Johnson Foundation (2003) about one third of Hispanic teens smoke cigarettes. Smoking levels among Hispanic youth have been reported to be both higher than for White adolescents (McDermott, Sarvela & Hoalt., 1992) and lower than for White adolescents (Escobedo et al., 1993; Bachman, Wallace & O'Malley, 1991; Warren & Collins, 1993; Headen, Bauman & Deane, 1991; Vega, Zimmerman & Warheit, 1993). Smoking levels for Hispanic youth appear to be related to their acculturation (Landrine, Richardson & Klonoff, 1994).

Several researchers have stressed the importance of exploring differences in behavior in different groups of Hispanics that may arise from different patterns of acculturation in subgroups that share a similar cultural heritage but different immigration history (Murguia et al., 2003; Galan, 1988; Gilbert & Alcocer, 1988; Bettes, 1990). However limited research has been conducted on subgroups of Hispanic youth in regard to smoking tobacco (Escobedo, 1989; Dusenbury et al., 1992).

It appears that simple knowledge of the dangers associated with tobacco use has had little impact on adolescent tobacco smoking. Increased attention to individual differences such as self-efficacy (Bandura, 1991) and health locus of control (Langkie, 1977) has been advocated in the study of health related behaviors (Booth-Kewley & Vickers, 1994). Because smoking tobacco is a known cause of chronic respiratory diseases, lung cancer and other health problems (CDC, 2000), and because the choice to smoke tobacco ultimately rests with the individual (Greenland, Johnson, Webber & Berenson, 1997; Hunter, Croft, Vizelberg & Berenson, 1987) including individual differences in research on smoking tobacco seems warranted.

Research on tobacco smoking among adolescents is used in the design of programs. The potential efficacy of programs targeting youth is supported by data (CDC, 1994), showing that if smoking does not start during adolescence, it is unlikely to occur; also, the probability of cessation among adults is inversely related to age of initiation (Coombs & Kozlowski, 1992; Breslau & Peterson, 1996).

If prevention programs are to be effective, cultural differences need to be taken into account when reaching out to Hispanic adolescents with information about smoking tobacco related health risks (Murguia et al., 2003; Galan, 1988; Gilbert & Alcocer, 1988; Bettes, 1990). It

is possible that results of research conducted on one Hispanic subgroup of youth may not be generalizable to all Hispanic adolescents or may not be relevant to another Hispanic subgroup.

Purpose

The purpose of this study is to refine our understanding of the interrelations among acculturation, health locus of control, and smoking tobacco in ethnic groups of Hispanic adolescents (Cuban Americans, Puerto Rican Americans and Mexican Americans). Because the term Hispanic refers to multiple cultures, an important aspect of this study is to identify differences in tobacco smoking and its predictors within and across those cultures. Recognizing differences among ethnic groups of Hispanic people is important for the development of responsive prevention programs. Specific hypotheses to be tested follow.

Hypotheses

1. There is no difference in age of initiation of smoking tobacco by gender and Hispanic ethnic group.
2. There is no difference in rate of smoking tobacco by gender and by Hispanic ethnic group.
3. There is no difference in acculturation strategy by gender and Hispanic subgroup.

For the following hypotheses, the decision of whether to control for gender and/or Hispanic subgroup will be based on results from the first three hypotheses.

4. Age of initiation of smoking tobacco will be predicted by a linear combination of acculturation strategy and health locus of control.
5. Rate of smoking tobacco will be predicted by a linear combination of acculturation strategy and health locus of control.

Finally, the overall differences in these Hispanic subgroups will be examined through a test of the following hypothesis.

6. Hispanic subgroups can be differentiated by a linear combination of age of initiation of smoking, rate of smoking tobacco, acculturation strategy, and health locus of control.

CHAPTER 2

REVIEW OF LITERATURE

In order to better understand tobacco smoking initiation and smoking in adolescence, researchers have examined sociodemographic, environmental, behavioral, and personal variables. Four theoretical bases have been used to explain the initiation to and the acquisition of smoking (Tyas & Pederson, 1998). They include social learning theory (Bandura, 1977), rational approach (Ajzen & Fishbein, 1970), emphasis on social norms and attitudes (Jessor & Jessor, 1977), and the developmentally oriented affective approach (Rosenberg, 1979).

Data from the national survey on drug and alcohol use among Hispanics in the United States conducted in 1982-84 showed disparities in smoking among Cuban Americans, Puerto Rican and Mexican Americans adolescents (Escobedo, 1989). Differences related to smoking tobacco initiation also have been found among Puerto Rican, Colombian, and Ecuadorian American adolescents by Dusenbury et al. (1992).

Some researchers (Murguia et al., 2003; Galan, 1988; Gilbert & Alcocer, 1988; Bettes, 1990) have suggested that acculturation may be accountable for differences in behaviors among Hispanic ethnic groups. Studies of tobacco smoking and acculturation among different ethnic groups have produced mixed results. Acculturation has been found to have a strong positive effect on smoking among Cuban American youth (Vega, Gil & Zimmerman, 1993), Mexican American adolescents (Apodaca, 2000; Andrade, 2003; Landrine, Richardson & Klonoff, 1994; Balcazar, Peterson & Cobas, 1996), and Puerto Rican boys (Moreno, Laniado-Laborin, Salli, 1994). Other studies have found no effect of acculturation on smoking tobacco among Mexican American adolescents (Lovato, 1994) or a negative effect among Mexican American girls but not boys (Elder et al., 1995). In order to understand differences among subgroups of Hispanic

Americans, it is useful to consider the history of Hispanic immigration to the United States

History of Hispanic Immigration to the United States

Hispanic groups living in the United States vary greatly in their immigration history and reasons for immigration. Among the earliest Mexican immigrants to the United States were those affected by the annexation of California in 1910 (Tilley-Lubbs, 2003). Migrant laborers established communities mostly in the Southern and Western states where agricultural immigration continues today (Goetz, 2003).

Cuban immigrants who sought political asylum in the U.S. after the Cuban Revolution (1959) represented predominantly middle and upper class Cubans of European descent (Goetz, 2003). In contrast, more recent Cuban immigrants are representative of the general working population (Goetz, 2003).

An increase in Puerto Ricans moving to the United States followed the acquisition of the island by the United States during the Spanish-American War (1890). Puerto Ricans were granted U.S. citizenship in 1920 and Puerto Rico was made a Commonwealth of the United States in 1958 (Weaver, 1994). Puerto Ricans have a unique immigration pattern because of their custom of moving between Puerto Rico and mainland United States, often operating in two cultures.

Geographic Distribution

Hispanic people have tended to concentrate in certain areas of the United States (U.S. Census Bureau, 2000). Those of Mexican origin live mostly in the western (Arizona, California, Colorado, New Mexico), and southern regions of the United States (Alabama, Florida, Virginia, West Virginia, Washington D.C., and Texas). Puerto Ricans tend to concentrate in the northeastern states (New York, New Jersey, Pennsylvania, and New England). The majority of

Cubans live in the south (Florida). Hispanics of Central and South American descent tend to live in various regions, concentrated in the northwest (32%), west (28%), and the south (35%) (CDC, 2000). Nearly half (46.4%) live in central parts of large urban areas (U.S. Census, 2000). A substantial number of Hispanic agriculture laborers live in rural area and may not be accounted for in census data because many are illegal immigrants (Goetz, 2003). Differences in geographic clustering are important because research studies conducted in different regions of the United States can be expected to involve Hispanics from different backgrounds (Goetz, 2003).

Acculturation

The process of acculturation has received considerable attention from anthropologists, psychologists, sociologists, social workers, and educators (Berry, 1990, 1997; Berry et al. 1989; Furnham & Bochner, 1986; LaFromboise et al., 1993; Liebkind, 2000; Ward, 2001). Different terms such as adaptation, integration and adjustment have often been used interchangeably with the term acculturation.

Acculturation has many definitions. The most common concept is that acculturation is the degree to which those in the minority culture adopt the majority culture or host country culture (Suarez, 1999). According to Social Science Research Centers definition, acculturation is a cultural change that becomes necessary because two or more different cultural systems have come together.

Some researchers define acculturation as a psychosocial adaptation following immigration to a new culture (Bettes et al., 1990). Others view it as a process by which the attitudes and behaviors of people from one culture are modified over time as a result of contact with a different culture (Moyerman & Forman, 1992). Acculturation can be considered primarily internal, or psychological, affecting the sense of well-being or self-esteem, or it can be

considered socio-cultural, referring to acquiring facility with the new language, gaining cultural knowledge, and establishing a network of social relationships (Berry 1974, 1980).

Theories of Acculturation

Over the years, two contrasting theories regarding immigrants' acculturation have emerged. The first one, based on the "melting pot" metaphor, represented the traditional societal vision of assimilation as a successful adaptation to the American culture (Morris, 1980). The melting pot framework is unidimensional and linear. The second theory (Glazer & Moynihan, 1970; Bibby, 1990), refers to acculturation as a multidimensional or multidirectional process in which people change on more than one dimension and both non-dominant and dominant cultures are subject of change.

The work of John Berry is the most influential in the field of acculturation psychology. Berry and his associates (Berry, 1970; Sommerland, & Berry, 1970; Berry, & Annis, 1974; Berry, Evans, & Rawlinson, 1972; Berry, Kalin, & Taylor, 1977; Berry et al., 1989) developed a model presenting how the minority culture (M) and the dominant culture (D) interact to create four generic strategies of acculturation:

1. The dominant culture is favored (M - D +).
2. The minority culture is favored (M + D -).
3. The two cultures co-exist in some form of biculturalism (M + D+).
4. Both cultures are diminished (M - D -).

Berry (1997) conceptualized acculturation strategies of individual and non-dominant ethno-cultural groups and compared them to acculturation strategies of dominant society.

The terms acculturation levels, types, modes or strategies have been used interchangeably in the literature. The phrase acculturation strategy will be used in this proposal.

Acculturation Strategies

Acculturation strategy represents the interaction of acculturation beliefs (the degree to which one wishes to maintain the culture of origin vs. replacing it with the host culture) and acculturation behaviors (the extent to which one seeks day-to-day interaction with members of the host group vs. avoiding them) or as Berry put it “the way people go about their acculturation.” Four major acculturation strategies have been identified based on the assumption that non-dominant groups and their individual members have the freedom to choose how they want to acculturate (Berry, 1997). Strategies are defined as follows:

1. Assimilation, when individuals do not wish to maintain their cultural identity and seek daily interaction with the other culture. This strategy is denoted M-D+.
2. Separation, when “individuals place a value on holding on to their original culture, and wish to avoid interacting with others.” Separation is denoted M + D -.
3. Integration, when there is an interest in both maintaining one’s own culture, while in daily interaction with other groups. Integration is denoted M + D+.
4. Marginalization, when there is little possibility or interest in cultural maintenance and little interest in having relations with others. Marginalization is denoted M - D -.

The dominant group can constrain the acculturation strategies of non-dominant groups or individuals (Berry, 2002). As a strategy, integration only works when the dominant society has an open and inclusive orientation toward cultural diversity and is explicitly multicultural (Berry, 1992; Berry & Kalin, 1995). This strategy requires non-dominant groups to adopt the basic values of the larger society and the dominant group to adapt its national institutions to better meet the needs of all groups living together.

Assimilation has been called an individualistic strategy because it involves the desire of individuals to improve their lives by joining the dominant culture and giving up on their culture of origin. This is particularly characteristic of immigrants who enter another culture in order to improve the quality of their lives (Lalonde & Cameron, 1993).

Immigrants who prefer to maintain their cultural heritage may view acculturation from a collectivist perspective. A collectivist perspective has been found among immigrants who identified with a non-dominant cultural group (Lalonde, Taylor, & Moghaddam, 1988; Moghaddam,). Although maintenance of cultural heritage is found among those who use an integrationist strategy, when maintenance is the primary goal, the acculturation strategy is often one of separatism (Taylor, & Lalonde, 1987).

The role of the dominant group is probably most obvious when immigrants are marginalized. Under this condition, an immigrant has little, if any, choice in the extent to which he or she joins the larger society. The dominant group is most likely to marginalize an immigrant group when their physical features are distinctive. When members of a non-dominant group experience prejudice and discrimination, they may become reluctant to pursue assimilation or integration because they fear rejection, especially if they are easily identifiable as members of their group (Moghaddam, 1988). They can appear to participate in their own marginalization.

It appears that from larger society's perspective, integration is most related to multiculturalism, assimilation is related to the melting pot, separation to segregation, and marginalization to exclusion (Berry, 1997). Acculturation involves beliefs and behaviors of both the non-dominant groups and the dominant group within a society.

Factors Influencing Acculturation

Numerous factors influence the acculturation strategy and the acculturation experience of individuals, including demographic characteristics, such as income and education; the motivation for migrating to a new culture; the expectations of the new culture; and the cultural distance between the society of origin and the society of settlement (Black, S., Markides K., 1993). Berry (1997) found it useful to distinguish exogenous from endogenous acculturation variables. He referred to exogenous variables as pre-acculturation factors (e.g., socio-demographic, status expectations, language, religion, and personality). Variables recognized by Berry as endogenous to the acculturation process included length of time in the new location, acculturation strategy, social support, and the attitudes of the dominant society (Berry & Sabatier, 1996).

Also, there is evidence in the literature about the importance of some group factors such as voluntary contact with dominant culture, physical differences in appearance, social ecology and vitality of the group (Moise & Bourhis, 1997). For example, people in voluntary contact are more likely to seek assimilation or integration than those who are not in voluntary contact, such as refugees living in ethnic communities (Williams & Berry, 1991).

Acculturation and Language

Individuals may completely adopt the dominant language, use both languages resulting in bilingualism, or keep the use only of their native language (Berry, 1980). Language is a very common component of acculturation assessment scales (Crespo et al., 2001; Sundquist & Winkelby, 2000).

Acculturation and Smoking Tobacco

Acculturation has been studied as a predictor of tobacco use. Some studies have found that the level of acculturation was linked to the likelihood of smoking for Cuban American boys

(Vega, Gil, & Zimmerman, 1993) and Hispanic women (Landrine, Richardson, Klonoff, & Flay, 1994; Moreno, Laniado-Laborin, & Sallis, 1994; Parker et al., 1998). In other studies, acculturation (without being specific about acculturation strategy involved) was not related to cigarette use among migrant Hispanic adolescents and adult Hispanics (Haynes, Harvey, & Montes, 1990; Lovato et al., 1994; Markides, Coreil, & Ray, 1987). Burnham (1987) found that less traditional beliefs (perhaps indicative of desire to assimilate?) among Mexican Americans were associated with depression, alcohol and drug dependence. Szapocznik and Kurtines (1980) found that immigrants from different ethnicities who used the integration strategy of acculturation were at lowest risk for substance abuse, including tobacco products.

Some possible explanations for the discrepancies in the literature may be due to analytic differences (univariate vs. multivariate analyses), age, or personality traits of participants (Tyas & Pederson, 1998). Most of the studies assess acculturation as higher or lower and do not discriminate between assimilation and integration strategies of acculturation. At this point, there are still many questions about acculturation strategies and tobacco use among adolescents from Hispanic ethnic subgroups.

Health and Health Locus of Control

According to the traditional biomedical perspective of health in western societies, health has been defined as the absence of disease (Mellner & Lundberg, 2003). From a biomedical stand point, physical health has been explained as a function of tissues and organs, and physicians have been advised to view physical health from a body-machine framework (Stewart, 1991). Other researchers (Mechanic, 1978) have pointed out that the individual experience of physical health is more holistic in nature.

Health Belief Model and Health Locus of Control

The health belief model considers the subjective perceptions of the individual and refers to the common belief that health may or may not be determined by the individual's action and behavior (Bowling, 1989). It is based on the construct of locus of control, which is embedded in the broader psychological theory of social learning (Rotter, 1990). In Rotter's (1954) social learning theory, behavior is conceptualized as a function of expectancy and reinforcement in a specific situation. His theory of locus of control addressed the more generalized expectancies of individuals (Rotter, 1966).

Langlie's (1977) investigation of the influence of health beliefs on health behavior revealed that the factor that had the greatest explanatory power was locus of control. The application of locus of control to health beliefs and behaviors has been a fruitful area of research (cf Strickland, 1989). The eventual integration of the health beliefs model with locus of control resulted in what is now called health locus of control.

Health Locus of Control (HLC) represents one's perception of the controllability of health outcomes, and whether responsibility for illnesses resides in one's own behavior or in outside influences (Jessor, Turbin & Costa, 1998). People who believe that outcome is directly the result of one's behavior are considered to have an internal health locus of control. According to Wallson and Wallson (1978), Jessor, Turbin and Costa (1998), and Steptoe and Wardie (2001), people with more internal HLC generally adhere more closely to health regimes, whereas more externally oriented individuals are less likely to engage in health-protective behaviors. Other researchers have found weak evidence (Pederson et al., 1984) or no evidence (Calhan & Rutter, 1986) of a relation between health locus of control and health behavior.

Trafimow and Finlay (1996) argued that individual differences should be taken into

consideration in the prediction of health behavior. In addition to possible personality factors, Stanton (1995) found age and gender differences in health locus of control among adolescents. Also, Armitage, Norman, and Conner (2002) found gender to be an independent predictor of some health behaviors such as drinking and health screening. Despite the fact that gender has been a useful predictor in some studies, it appears that health locus of control, like its parent construct, locus of control, may be more specific to situation than to gender.

There is mixed evidence on gender differences in locus of control of adolescents (Chubb, Fertman, & Ross, 1997; Archer & Waterman, 1988). However, perhaps because of the timing of maturity, females appear to become more internal in their expectancy beliefs about one year before males do. At this point, it appears that situations may influence health locus of control more than gender does.

Health Locus of Control and Acculturation

Differences in health beliefs among Central American, South American, Mexican, and Caribbean Hispanics need to be acknowledged. For instance, Central American health beliefs and practices are largely influenced by religious and indigenous world view originated in pre-Columbian times (Murguia, Peterson, Rolf & Zea, 2003) when the Mayans attributed health to the equilibrium between forces of nature (Garcia et al., 1999).

Mexican American adolescents who identified themselves as Mexicans tended to have external health locus of control in contrast with those who identified with biculturalism and Americanism who had internal health locus of control (Guinn, 1998). Danklefs and Rosengard (2003) found a discrepancy between acculturation level and internal health locus of control among Hispanic adolescents from the Bay area: highly assimilated adolescents with internal health locus of control were engaging in high risk sexual behavior.

Health Locus of Control and Smoking Tobacco

The study of smoking and HLC has produced mixed results. More internal health beliefs have been associated with both smoking and not smoking in the general population (Strickland, 1978; Bennett et al., 1997; Calladhan, 1998; Jensen, Counte, & Gladon, 1992; Georgiades, 1997). However, tobacco-using adolescents have been found to have more external HLC compared with non-users (Booth-Butterfield M., Anderson, & Booth-Butterfield S., 2000; Eiser et al., 1989; Bennett et al., 1997, Bundek et al., 1993). The discrepancies in the literature may be related to the conceptual basis of the health locus of control measures (Marshall, 1991); to the lack of statistical power in studies (Callaghan, 1998; Rabinovowitz et al., 1992; Schank & Lawrence, 1993); to the use of heterogeneous samples in terms of age, education, and health status; or to cultural differences.

Implication of Health Locus of Control Study

Some researchers (Strickland, 1978; Wallston 1992; Steptoe & Wardie, 2001) consider the health locus of control model to be a useful tool in the development of programs leading to smoking cessation. This approach has received only limited support by others (Bennett et al., 1997; Norman et al., 1997; Wurtele, Britcher & Saslawsky, 1985).

Summary

Smoking tobacco is a health problem that often begins in adolescence. Although there are many studies of this problem, including studies of Hispanic people, it has not been compared in ethnic groups of Hispanic adolescents. There are cultural differences among Cuban-American, Puerto Rican-American, and Mexican-American youth that support the possibility of individual differences in responses to social stimuli regarding the desirability of smoking. The

importance of this issue is clear in the evidence of health problems and the cost of smoking tobacco related health care in this society.

In order to fully understand smoking tobacco among Hispanic youth, it will be useful to consider the individual differences of health locus of control and acculturation strategy. Both of these factors are reflective of generalized expectancies; that is, both represent individual characteristics regarding perceptions of contingencies or independence between their behavior and subsequent events.

This study is an examination of the interrelations among Hispanic ethnic groups, age of initiation and rate of smoking tobacco, health locus of control, and acculturation strategies.

CHAPTER 3

METHODS

Sample

In this study, an existing data set was used. The data were collected as part of a national survey conducted from 1982 to 1984 (National Center for Health Statistics, 1984). It includes Cuban Americans from Dade County, Miami, FL; Mexican-Americans from five states (Texas, New Mexico, Arizona, Colorado, and California), and Puerto Rican Americans from the Greater New York City metropolitan area. These areas are considered to be representative for the respective sub-groups because they contain the largest concentration of each sub-group (National Center for Health Statistics, 1984).

Data related to acculturation and health locus of control were collected on the Adult Sample Person Questionnaire through household interviews with adolescents 12-19 years old. Data related to tobacco use were collected on the Adult Sample Person Supplement Questionnaire (HHNES) through interviews with adolescents 12-19 years old administered in mobile medical examination centers. Questionnaires were administered both in English and Spanish. The sample for the proposed analysis comprises 213 Cuban-Americans, 1350 Mexican-American, and 632 Puerto-Ricans. The final sample used for analyses contained 20 Cuban-Americans, 164 Mexicans, and 88 Puerto Ricans. A description of the sample can be found in Table 1.

Measurement

Three constructs from the data set (HHANES, 1984) will be used: acculturation strategy, health locus of control, and tobacco use. Measurement of each is described below.

Acculturation Strategy

There is a concern regarding the adequacy of existing measures of the acculturation process (Betancourt & Lopez, 1993; Felix-Ortiz, Newcomb & Myers, 1994). The reason for this is the existence of two competing perspectives on the nature of the acculturation process (e.g. unidimensional vs. multidimensional) (Laroche, Kim, Hui & Tomik, 1998).

Some researchers consider acculturation to be unidimensional, and unidirectional (Trimble & Olmedo, 1986; Suarez-Orozco, 2001), usually in the direction of a minority group adopting patterns of the dominant group (Laroche et al, 1998; Suinn, 1998). Other researchers view acculturation as bidimensional and multidirectional (Berry, 2001; Magnana, 1996; Mendoza, 1989; Camilleri, 1991) where the dominant group also adopts patterns typical of the minority group.

The multidirectional scales are based on the concept of acculturation as a process involving language, cultural beliefs, and values. Marin et al. (1987) used the Short Acculturation Scale for Hispanics, designed to assess language use, media preference, and ethnic-social relations with overall reliability of $\alpha = 0.92$. The advantage of a multidimensional scale is that it reflects the degree of involvement in both cultures by assessing ethnic pride, food preferences, child rearing practices, and interpersonal relationships (Cortes, Rogler, & Malgady, 1994). A limitation of scales designed for Hispanics is that only Mexicans and Puerto Ricans were used in the development (Hazula et al., 1988; Marin et al., 1987; Burnham et al., 1987; Cortes, Rogler & Malgady, 1994). Also, these scales do not distinguish well those individuals who are highly immersed in both Hispanic and American cultures from those who are moderately immersed in both cultures (Szapocznik et al., 1980).

The unidimensional scales rely mostly on language use or preference to assess acculturation. The most popular unidimensional scale for Hispanics is the 20-item scale designed for Mexican Americans by Cuellar et al. (1980). Language use is commonly included in measures of acculturation (Burnam et al., 1987; Caetano, 1987; Dusenbury, Kerner, James-Ortiz & Botvin, 1990). Wallen (2002) used a four-item language usage scale to measure acculturation with good internal reliability, $\alpha = 0.81$, consistent with previously published results (Norris et al., 1996). He concluded that a brief measure of acculturation based on language, particularly when combined with country of birth and length of stay in the United States is most desirable.

In this study, I used a variation of the unidimensional scale designed by the Hispanic Health and Nutrition Survey (HHANES), which is derived from Cuellar's scale. The HHANES acculturation scale has been used by many researchers (Solis et al., 1990; Deyo et al., 1985; Chavez et al., 1994; Khan et al., 1997; Trevino, 1982; Black et al., 1993) to explore the relation between acculturation and health.

The HHANES acculturation score (Sollis, 1984) included eight items: four pertaining to language; three pertaining to ethnic identification, and one pertaining to generation status and was calculated only for Mexican Americans (20-74 years old). Because 97.5% of Cubans (age 20-74) and 80.5% of the Puerto Ricans (age 20-74) were first generation and identified themselves as Cubans or Puerto Ricans only, there was very little variability in their responses. Only three language items from the HHANES study were used to assess acculturation (cf Solis, 1984).

In this study I measured acculturation based on three items: two language assessment items and one item for self-reported ethnic identification of participant. The rationale behind the decision not to use the two additional questions related to language (originally used by Sollis,

1984) is that the answers to those questions do not provide an option for equal use of both languages and does not contribute to the assessment of acculturation strategy involving the use of both languages. The reason for excluding generation status (originally used by Sollis, 1984 to assess acculturation score in HHANES study) is that assimilation, integration and separation as strategies represent individual choices and birthplace is not an individual choice. Examples of items include, “Would you say that you speak mostly Spanish, or mostly English, or do you speak Spanish and English about the same?” “What language do you prefer?” and “Which of these groups best describe your ethnic identification?”

To operationalize acculturation in the current study, participants were categorized as using one strategy: assimilation, integration, or separation.

The *integration* strategy for acculturation was operationally defined by the noted answers to the following questions:

1. Would you say that you speak mostly Spanish, or mostly English, or do you speak Spanish and English about the same? Answer: “Spanish and English about equally.”
2. What language do you prefer? Answer “Spanish and English about equally.”
3. Which of these groups best describe your ethnic identification? Answer “could be any of the following, depending on language spoken/preferred: “Puerto Rican, Cuban, Cuban-American, Mexican, Mexican American, Chicano, and Latin American.”

The *assimilation* strategy for acculturation was operationally defined by the noted answers to the following questions:

1. Would you say that you speak mostly Spanish, or mostly English, or do you speak Spanish and English about the same? Answer: “Mostly English”;
2. What language do you prefer? Answer “English only” and “Mostly English”;

3. Which of these groups best describe your ethnic identification? Answer could be any of the following: “Cuban American, Mexican American, Latin American”;

The *separation* strategy of acculturation was operationally defined by the noted answers to the questions:

1. Would you say that you speak mostly Spanish, or mostly English, or do you speak Spanish and English about the same? Answer “Mostly Spanish”
2. What language do you prefer? Answer “Spanish only,” “Mostly Spanish”
3. Which of these groups best describe your ethnic identification? Answer could be any of the following: “Cuban, Mexican, Puerto Rican,” or “hispano.”

Health Locus of Control

Most researchers use the multidimensional, 11-item HLC scale developed by Wallston, Wallston, Caplan, & Maides (1978), which incorporates three dimensions (internal, powerful others, and chance). Because there is only one question in the HHANES pertaining to Health Locus of Control, HLC was operationally defined by the answer to the question “How much control do you think you have over your future health” with a response scale of 1 (*a great deal*) to 4 (*none*). Those participants who scored ≤ 2 were considered to have more internal health locus of control and those who scored > 2 were considered to have more external health locus of control.

Smoking Tobacco

HHANES data on smoking tobacco have been used to determine age-specific prevalence of cigarette smoking and health issues among adults (Marks, Garcia & Solis, 1990). Analyses have shown that smoking (i.e., smokers vs. non-smokers) is inversely related to health behavior

(for instance the use of health services) among Mexican American, Puerto Rican American and Cuban American men. The only other study that used HHANES data on tobacco smoking was Escobedo, Remington, and Anda (1989), in which study adolescents were not separated from adults. In this study, current smokers were defined by the positive answer to both of the following questions: "Have you ever smoked at least 100 cigarettes in your entire life," and "Do you smoke now?" According to CDC definition for smokers before 1992, current smokers were identified based on positive responses to the abovementioned questions. In 1992 the definition of current smoker in the National Health Interview Surveys was modified to specifically include persons who smoked on "some days?" "Have you smoked at least 100 cigarettes in your entire life?" and "Do you now smoke cigarettes every day, some days, or not at all?" To be considered a current smoker, a teenager has to report smoking cigarettes at least once in the past 30 days, under a definition set by the U.S. Centers for Disease Control and Prevention (CDC, 1992). Two smoking tobacco constructs were employed in the current study: age of initiation, and rate of smoking.

1. Age of initiation of smoking was operationally defined with the question: "About how old were you when you first started smoking cigarettes?"
2. Rate of smoking was operationally defined by the answer to the question "How many cigarettes a day do/did you smoke daily?" The answer represents the actual number of cigarettes smoked per day from 1 to 50.

Data Analysis

Data were first checked to insure that there was variability on all variables. The first three hypotheses were tested with 2(gender) x 3(Hispanic ethnic group) ANOVAs. Hypotheses four and five were tested with multiple regression. The sixth hypothesis was tested with discriminant analysis.

CHAPTER 4

RESULTS

The purpose of this study was to investigate smoking behaviors among Hispanic adolescents in the United States, specifically among those of Mexican, Cuban, and Puerto Rican origin. Whites and Hispanic Americans show significantly higher levels of initiation and current smoking than African and Asian Americans (Bachman, Wallace & O'Malley, 1991; Kahn, Warren & Collins, 1993; McDermott, Sarvela & Hoalt, 1992).

Smoking levels among Hispanic youth have been reported to be both lower than for White adolescents (Escobedo et al., 1993; Bachman, Wallace & O'Malley, 1991; Warren & Collins, 1993; Headen, Bauman & Deane, 1991) and higher than for White adolescents (McDermott, Sarvela & Hoalt., 1992) however, it is unclear whether smoking is higher among all Hispanic adolescents or just among adolescents in specific Hispanic subgroups. Results are presented for each hypothesis tested. The means and standard deviations for smokers are shown in Table 2.

There is no Difference in Age of Initiation of Tobacco Use by Gender and Hispanic Subgroup

This hypothesis was accepted. No difference in age of initiation of smoking tobacco by gender and ethnic group was found. The mean for male Mexicans was 14.24 ($SD = 2.099$), and 14.00 ($SD = 2.11$) for female Mexicans. The mean for male Cubans was 13.85 ($SD = 2.267$) and 14.50 ($SD = 2.00$) for female Cubans. The mean for male Puerto Ricans was 14.17 ($SD = 2.23$) and 14.05 ($SD = 1.665$) for female Puerto Rican teens. See Table 2.

There is no Difference in Rate of Tobacco Use Smoking by Gender and Hispanic Subgroup

No difference in rate of tobacco smoking by gender was found, males, $M = 10.77$, $SD = .789$, females, $M = 10.821$, $SD = .997$; however, a difference was found for ethnic groups, $F = 19.90$, $p < .000$. The difference in rate of smoking by gender was not significant. However the difference in rate of smoking by ethnic group was significant: Post hoc tests indicate that the difference between Mexican American, $M = 6.55$, and Cuban American, $M = 14.33$, teens was significant, $p < .000$. The difference between Mexican American and Puerto Rican, $M = 11.51$, teens also was significant, $p < .000$; whereas the difference between Cuban American and Puerto Rican teens was not significant. There was no significant interaction for gender and ethnic subgroups. See Table 2.

There is no Difference in Acculturation Strategy by Gender and Hispanic Subgroup

Holding sex constant, there appears to be no association between ethnic group and acculturation strategy, $X^2 = 5.218$, $df = 4$, *n.s.* However, holding ethnic group constant and considering sex and acculturation strategy, it appears that more females than males use the assimilation strategy, more males than females use the separation strategy, and males and females are about the same in the use of integration strategy, $X^2 = 11.09$, $df = 2$, $p < .004$. About 20% of variability in acculturation strategy is explained by knowing the sex of the respondent.

Age of Initiation of Tobacco Smoking will be Predicted by a Linear Combination of Acculturation Strategy and Health Locus of Control

Hypothesis four stated that age of initiation of smoking tobacco would be predicted by a linear combination of acculturation strategy and health locus of control. This was not supported ($R^2 = .001$, *n.s.*). The combination of acculturation strategy and health locus of control was not related to age of initiation of tobacco smoking.

Rate of Smoking Tobacco will be Predicted by a Linear Combination of Acculturation Strategy and Health Locus of Control

Hypothesis five stated that rate of smoking tobacco would be predicted by a linear combination of acculturation strategy and health locus of control. This was not supported, $R^2 = .004$, *ns*.

Hispanic Subgroups can be Differentiated by a Linear Combination of Age of Initiation of Smoking Tobacco, Rate of Tobacco Use, Acculturation Strategy, and Health Locus of Control. (If Deemed Necessary From Previous Results, Gender will be Held Constant.)

According to hypothesis six, Hispanic ethnic groups can be differentiated by a linear combination of age of initiation of smoking tobacco, rate of smoking tobacco, acculturation strategy, and health locus of control (see Table 3). Mexican American teens were differentiated from Cuban American and Puerto Rican teens, but Cubans and Puerto Ricans were not differentiated from each other. Results of a discriminant analysis were significant, $W = .83$, $X^2 = 55.421$, $df = 10$, $p = .000$, but classification results were only significant for Mexican Americans.

Considering structural correlations (the raw scores correlated with the discriminant function), the number of cigarettes smoked per day was the most important variable for discriminating among ethnicities. However, this combination of variables only classified Mexican Americans correctly (according to the group they were known to be in; 87.2%). Only 5% of Cuban Americans and 37.5% of Puerto Ricans were correctly classified.

Summary of Findings

1. There is a difference in rate of smoking by Hispanic subgroup.
2. There is no difference in age of initiation by gender and Hispanic group.
3. There is no difference in rate of smoking by gender.
4. There is difference in the percentage of smokers among subgroups; more Puerto Ricans than Cuban or Mexican Americans smoke.
5. Acculturation strategy and HLC were not found to predict age of initiation and rate of smoking.
6. The vast majority of participants express high internal health locus of control.
7. There is no subgroup difference by acculturation strategy except for Mexican separation (18%), which represents twice as many Mexicans as strategies used by either Cubans (10%) or Puerto Ricans (9.1%).
8. There is gender difference by acculturation strategy: girls use the assimilation strategy more than boys.
9. Only Mexican American teens can be classified by a linear combination of age of initiation of smoking tobacco, rate of smoking tobacco, acculturation strategy, and health locus of control.

CHAPTER 5

DISCUSSION

The purpose of this study was to assess differences in smoking behavior by Hispanic ethnic subgroups of youth and to examine the relation between individual acculturation strategy, health locus of control, and smoking tobacco.

Smoking Tobacco

The overall percentage of smokers in this sample was 14%. The male/female ratio was 1.2:1. This ratio is consistent with Giovino (1997) who found that males were as likely as females to smoke in the general adolescent population in the United States. However there were differences in the percentage of smokers by ethnic subgroups (Mexicans 12%, Cubans 9% and Puerto Ricans 13%). There are also differences in the male/female ratio of smokers in Hispanic subgroups (Mexican M/F ratio=3:2; Cuban M/F ratio=1:1.2; and Puerto Rican M/F ratio 2:1).

Not considering the male/female ratios, the mean rate of daily cigarette use in this study was 6.45 for Mexicans, 13.52 for Cubans and 11.52 for Puerto Ricans. However, according to data from the National Health Survey of Drug and Addiction (NHSDA, 2000), the rate of daily cigarette use among Hispanics aged 12 and older was 12.8% for Puerto Ricans, followed by Mexicans (21.7%), and Cubans (19.4%). The NHSDA data were collected about 10 years later than were the data used in this study, suggesting that the rate of smoking among youth in Hispanic subgroups has increased.

In the data analyzed for this study, the average age of initiation of smoking tobacco was 14 years; no difference in age of initiation was found for either ethnic subgroup or gender. Fourteen is younger than the average age of smoking initiation for the general population reported by the Surgeon General (Elders, Perry, Ericksen, & Giovino, 1994). The average age of

daily smokers was 17 years for Puerto Ricans and 17.4 years for Mexicans and Cubans and is compatible with the average of 17.7 years reported in the Report of the Surgeon General (Elders, Perry, Ericksen, & Giovino, 1994).

In this study, the average number of cigarettes smoked daily was 6.45 for Mexicans, 13.52 for Cubans and 11.52 for Puerto Ricans, which represented a significant difference by subgroup, but there was no gender difference in rate of daily smoking tobacco. This was consistent with the National Survey Health Drug & Addiction (2000) findings that show ethnic subgroup differences by rate of smoking.

Acculturation

Studies of acculturation among Hispanic groups have produced mixed results:

1. Assimilation has been found to have a strong positive effect on smoking on Cuban American youth (Vega, Gil & Zimmerman, 1993), Mexican American adolescents (Apodaca, 2000; Andrade, 2003; Landrine, Richardson & Klonoff, 1994; Balcazar, Peterson & Cobas, 1996), and Puerto Rican boys (Moreno, Laniado-Laborin, Salli, 1994).
2. Assimilation has been found to have no effect on smoking tobacco among Mexican American adolescents (Lovato, 1994).
3. Assimilation has been found to have a negative effect among Mexican American girls but not boys (Elder at al., 1995).

Although acculturation strategy was not found to predict rate of smoking tobacco in this study, the vast majority of teens used either assimilation or integration strategy. Both strategies are commonly described as high levels of acculturation in the literature. In this study, the assimilation strategy was the most used by Mexican Americans (48.8 %) and 52.3% of Puerto Ricans (52.3%) and integration was the most used strategy by Cuban Americans (50.0 %).

Separation was significantly less used by all subgroups (Mexican Americans (18.3%), Cuban Americans (10.0%) and Puerto Ricans (9.1%). There was no significant difference for acculturation strategy by ethnic group.

However, girls in all subgroups were more likely to assimilate than boys and boys were more likely to separate. About 20% of variability in acculturation strategy is explained by knowing the sex of the respondent. This result is consistent with findings reported by Marin et al. (1989) showing that assimilated females tend to smoke more than their non-assimilated counterparts. According to Kerner, Breen, Tefft, & Silsby, (1998), Hispanic adolescent females who are trying to fit into the dominant culture will tend to take on the values of that culture in their attempts to break away from the more traditional nonsmoking norms. This is particularly interesting for intervention program design. It suggests that the intervention approach may need to be different for males and females. Many females are inclined to want to be more like their host country. Males, on the other hand, appear more inclined to keep their language and culture separate from the host country. The issue of language is particularly important, given that acculturation strategy in this study was assessed in terms of language use and preferences. It is probable that an effective intervention with males would require the use of their language and native speakers of the language. For females, the use of English in intervention programs might be used to support their desire to become more fluent in English.

The common practice to assess acculturation based only on language skills could be misleading if gender difference is not taken into consideration. Including ethnic self-identification allows for differentiating the integration from the assimilation strategy.

Although acculturation strategy was not found to predict rate of smoking in this study, the vast majority of teens (72% Mexicans, 85% Cubans, but not Puerto Ricans, 9%) used either

the assimilation or the integration strategy. Both strategies are described as high levels of acculturation in the literature.

Health Locus of Control

The fourth and fifth hypotheses stated that age of initiation and rate of smoking tobacco would be predicted by a linear combination of HLC and acculturation strategy. These hypotheses were not supported. However, HLC was the most important variable for differentiating among ethnic groups, as was found in the test of hypothesis six. Contrary to expectations, Mexican youth who had the lowest rate of smoking had more external health locus of control and, as a group, they were most homogeneous in their HLC.

HLC has been found to be related to health behavior and people with more internal HLC are considered to adhere more closely to health regimes, whereas more externally oriented individuals are less likely to engage in health-protective behaviors (Wallson & Wallson, 1978; Jessor, Turbin & Costa, 1998; Steptoe & Wardie, 2001). Other researchers have found weak evidence (Pederson et al., 1984) or no evidence (Calhan & Rutter, 1986) of a relation between health locus of control and health behavior.

More internal health beliefs have been associated with both smoking and not smoking in the general population (Strickland, 1978; Bennett et al., 1997; Calladhan, 1998; Jensen, Counte, & Gladon, 1992; Georgiades, 1997). However, tobacco-using adolescents have been found to have more external HLC compared with non-users (Booth-Butterfield M., Anderson, & Booth-Butterfield S., 2000; Eiser et al., 1989; Bennett et al., 1997, Bundek et al., 1993), which was not supported by this study. The Cuban adolescents participants have the highest rate of smoking and the most internal HLC.

In this study, findings regarding health locus of control and tobacco smoking were not similar to findings in some other studies. High rates of smoking were associated with internal HLC (Cuban) and low rates of smoking were associated with external HLC (Mexican). Thus, it appears to be important to re-examine the relation between HLC and smoking tobacco. Some researchers (Strickland, 1978; Wallston 1992; Steptoe & Wardie, 2001) consider the health locus of control model to be a useful tool in the development of programs leading to smoking cessation by shifting from external toward internal HLC. This approach has received only limited support by others (Bennett et al., 1997; Norman et al., 1997; Wurtele, Britcher & Saslawsky, 1985). Carlisle-Frank (1990) suggested that individuals' control orientation for specific health habits might differ from their control orientation in other life domains. This has to be taken into consideration in the design of health related surveys. The lack of questions specifically targeting a particular health behavior can yield misleading results and could be the reason for discrepancy and contradictory results in the literature.

The primary limitation of this study is that the question used to assess health locus of control was related to the general perception of individual power over one's health and not specifically related to smoking tobacco. It is possible that an individual perceives his/her power over general health and power over smoking habits differently. In addition, the use of a single question to assess health locus of control has not been ordinarily used in previous research (including the one based on HHANES data). This is certainly a limitation of the study because there is no basis for estimating reliability.

Although HLC (Booth-Butterfield M., Anderson, & Booth-Butterfield S., 2000; Eiser et al., 1989; Bennett et al., 1997, Bundek et al., 1993) and acculturation (Vega, Gil, & Zimmerman, 1993; Landrine, Richardson, Klonoff, & Flay, 1994; Moreno, Laniado-Laborin, & Sallis, 1994;

Parker et al., 1998; Haynes, Harvey, & Montes, 1990; Lovato et al., 1994; Markides, Coreil, & Ray, 1987) have been separately linked to smoking by some researchers, the results from the present study did not support the hypothesis stated that Hispanic ethnic groups could be differentiated by a linear combination of age of initiation of smoking tobacco, rate of smoking tobacco, acculturation strategy, and health locus of control. Considering structural correlations, the number of cigarettes smoked per day was the most important variable for discriminating among ethnicities. However, this combination of variables only classified Mexican Americans correctly (87.2%), therefore only Mexican American teens can be differentiated by a linear combination of age of initiation of smoking tobacco, rate of smoking tobacco, acculturation strategy, and health locus of control.

Conclusions

The analysis of the results from this study shows that Hispanic youth are not a homogenous group in terms of smoking tobacco. The three studied subgroups differ in terms of percentage of smokers and rate of smoking tobacco. Although almost 85% of participants tend to have a more internal health locus of control, HLC was not found to predict smoking. Smoking was not predicted by acculturation strategy either. Further research is needed to examine subgroup heterogeneity that exists in Hispanic population in order to identify societal, interpersonal, and individual factors related to smoking tobacco among subgroups of Hispanic youth.

The strategy of acculturation used by the individual is important to know because it may be useful in planning intervention programs. Although the strategy of acculturation represents an individual or group choice, there are many factors such as neighborhood, quality of education, SES, peers, and church influence among others, that may influence acculturation strategy and

interact with individual smoking behavior. Acculturation assessment needs to be based on a broader representation of individual cultural preferences. The common practice to use language to assess acculturation by proxy has been shown to be acceptable, but it is not as rich a description as one including self-identification. Also, additional studies are needed to examine the relation between acculturation and gender.

It is important to develop and use culturally competent approaches to research and intervention programs that take into consideration similarities and differences in smoking among teens from Hispanic subgroups. The results of studies based only on a sample of Mexican teens cannot be extrapolated to all Hispanic teens. Important differences in Hispanic subgroups were revealed in this study. There may be many more that warrant our attention.

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APPENDIX

TABLES

Table 1. Description of Adolescents Who Smoke in Hispanic Subgroups

	Mexican		Cuban		Puerto Rican	
	Male	Female	Male	Female	Male	Female
	(n=99)	(n=65)	(n=13)	(n=7)	(n=40)	(n=48)
Age						
Mean	17.32		17.40		17.05	
SD	1.55		1.57		1.73	
Family Income						
% <\$20,000	60.9	67.6	53.4	59.7	64.1	74.4
% \$20,000-30,000	21.2	18.0	21.9	17.5	17.2	10.3
% >\$30,000	17.9	14.4	24.0	23.3	18.7	15.3
Education						
% 7-9 years	31.5	42.1	28.8	34.9	39.1	41.6
% 9-11 years	39.4	43.1	45.2	48.4	42.1	44.8
% 12 years or more	5.4	6.1	15.0	16.9	17.2	18.2
Family Structure						
Two parents	78.5	67.7	75.9	67.2	63.3	44.1
Single parent	7.4	22.1	9.9	22.9	12.2	50.5
Other	14.1	11.2	9.9	7.8	24.5	5.4
Generation in USA						
First generation	22.8	24.7	26.1	29.1	28.8	27.8
Second generation	14.2	14.7	58.7	60.2	62.1	62.9
Third generation	53.1	60.2	15.1	10.4	8.2	8.4

Table 2. Results of a 2(Gender) X 3(Ethnic Group) ANOVA on Age of Initiation and Rate of Tobacco Use

	Male		Female	
	Mean	SD	Mean	SD
<u>Age of Initiation</u>				
Mexican Americans	14.24	2.10	14.00	2.11
Cuban Americans	13.85	2.27	14.50	2.00
Puerto Ricans	14.17	2.23	14.05	1.67
<u>Rate of Tobacco Use*</u>				
Mexican Americans	6.19	5.47	6.63	5.79
Cuban Americans	13.23	13.41	13.87	10.06
Puerto Ricans	12.80	8.24	10.22	7.52

* $p < .000$

Table 3. Discrimination of Ethnic Subgroups by a Linear Combination of Age of Initiation of Smoking Tobacco, Rate of Tobacco Use, Acculturation Strategy, and Health Locus of Control

	Coefficient	<i>p</i>	
<u>Discriminant Coefficients</u>			
Age of Initiation	-.058		
Rate of Tobacco Use	-.494		
Health Locus of Control	.781		
Integration Strategy	.609		
Assimilation Strategy	.716		
<u>Structural Coefficients</u>			
Health Locus of Control	.732		
Rate of Tobacco Use	-.489		
Integration Strategy	.130		
Assimilation Strategy	.146		
Age of Initiation	-.047		
<u>Significance of the Model</u>			
Canonical correlation	.275		
Wilks' Lambda	.913		
Chi Square	24.169	.007	
<u>Classification Results</u>			
	Mexican	Cuban	Puerto Rican
Mexican	95.7		
Cuban		0.0	
Puerto Rican			15.9