

# Alcohol Abuse among Puerto Ricans: In Search of a Theoretical Model

Héctor Luis Díaz\*

## Resumen

Este trabajo se basa en un análisis secundario de datos recopilados mediante un estudio transeccional que intentaba explorar las asociaciones entre aculturación, estrés y consumo de alcohol en una muestra no-probabilística de cien puertorriqueños que residen en el estado de Massachusetts. El presente artículo pretende ofrecer una mayor comprensión de la validez del “modelo de aculturación”, del “modelo de estrés por aculturación” y de la “teoría del conflicto cultural” en el caso de consumidores de alcohol procedentes de Puerto Rico. Se analiza, además, hasta qué grado estos diferentes modelos teóricos constituyen mejoras al compararlos con el método tradicional que combina unas cuantas variables independientes consideradas claves para explicar y predecir el abuso de alcohol entre puertorriqueños.

Los resultados de este análisis secundario de datos no demostraron ninguna asociación significativa entre niveles de aculturación y consumo de alcohol ni tampoco entre aculturación y estrés. Se encontraron relaciones débiles entre tipos específicos de estrés y consumo de alcohol. Los resultados no sostienen, por lo tanto, al modelo de aculturación y ofrecen sólo un soporte endeble para el modelo de estrés por aculturación o para la teoría de conflicto cultural. Al mismo tiempo el estudio detectó asociaciones más fuertes entre nivel educativo, lugar de nacimiento, tiempo de residencia en los Estados Unidos, color de la piel y consumo de alcohol. Sobre esta base se recomienda rechazar modelos demasiado simples y desarrollar en su lugar modelos teóricos multivariados y para grupos étnicos específicos. Se discuten finalmente las implicaciones para las políticas públicas a las que lleva la identificación de factores del abuso de alcohol entre puertorriqueños.

## Abstract

A secondary analysis of data was conducted on a cross-sectional survey conducted by the author. The original survey aimed at exploring the associations between the acculturation, stress and alcohol consumption of a non-probability sample of 100 Puerto Ricans residing in the state of Massachusetts. The current article aims at providing insights into the validity of the “acculturation model”, the “acculturative stress model” and “culture conflict theory” for Puerto Rican alcohol users. Furthermore this article explores the extent to which these different theoretical models represent an improvement over the traditional method of combining a few key independent variables in an effort to explain and predict alcohol abuse among Puerto Ricans.

The findings of this secondary analysis of data revealed no significant associations between levels of acculturation and alcohol consumption or between acculturation and stress. Weak associations were found between specific types of stress and alcohol use. The findings of this study provide no support for the acculturation model and little support for the acculturative stress model or culture conflict theory. At the same

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\* Héctor Luis Díaz is Assistant Professor of Social Work at The University of Texas at Arlington. His email address is: [hdiaz@uta.edu](mailto:hdiaz@uta.edu); This author expresses his appreciation to Manuel García y Griego, Roberto Treviño, Christian Zloniski and Alejandro del Carmen, research associates for the Center of Mexican-American Studies at The University of Texas at Arlington, for their valuable suggestions on an earlier version of this article.

time findings revealed stronger associations between levels of education, place of birth, length of residence in the U. S., skin color, and alcohol use. As a result, reliance on overly simplistic models is discouraged and the development of ethnic group-specific and multivariate theoretical models is highly recommended. Policy implications are discussed of identifying predictors of alcohol abuse among Puerto Ricans.

## **Introduction**

Latinos represent one of the fastest-growing population subgroups in the United States with a rate of growth much higher than the rate of the general population (Schodilski, 2003) According to the U.S. Bureau of the Census (2001), in the year 2000 there were 32.8 million Latinos living in the United States. Nevertheless, due to alleged census undercount, others estimate the number of Latinos in the United States at approximately 37 million (Schodilski, 2003). The Puerto Rican community represents the second largest Latino group in the continental United States and accounts for approximately 9% of all Latinos in the country. This amounts to approximately 3 million people. This figure, however, does not include the almost 4 million people who live in Puerto Rico (U.S. Bureau of the Census, 2001).

The incidence of alcohol abuse and alcoholism within the Puerto Rican population is disproportionately high when compared to the general population. As early as 1976, it was found that the death rate due to alcohol abuse among the mostly Puerto Rican population of East Harlem, New York, was 4.8 times the state average (Alcoholism, 1981). Nielsen (2000: 301) found that “Puerto Ricans and Mexican-Americans drink more often and heavily and experience more problems” than other Latino groups”. Johnson and Delgado (1989) reported that by age 18, 46% of Puerto Ricans nationwide have used alcohol and 20% have used cocaine. A national survey found that 24% of Puerto Ricans engage in heavy drinking as compared to 14% for the general population (Caetano, 1988; Cahalan and Room, 1974). The policy pertinence of this problem stems out of its potential for eventually reaching catastrophic proportions. Such danger dictates that social workers and other helping professionals should work diligently to identify factors contributing to the incidence and prevalence of this health and social ailment.

The study of factors associated with alcohol abuse among Puerto Ricans has practical and theoretical implications. On one side, practitioners seek to design and implement interventions that can effectively ameliorate the problem. Social and behavioral researchers, on the other hand, seek to identify psychosocial factors associated with the alcohol consumption of Puerto Ricans and other Latinos in order to inform policy making and the delivery of services. A review of the available literature on the subject reveals unanswered research questions that have led to an academic debate. Does the alcohol consumption of Latinos in the United States increase as they become more acculturated to the dominant culture of the United States and as they engage in adopted culture-specific behaviors? Is the high alcohol consumption of Latinos primarily the result of the stresses that accompany the acculturation experience? Is high alcohol consumption the result of partial acculturation, marginalization and culture conflict? This study makes a contribution to this academic discussion that also has practical implications.

### **Uniqueness of the Puerto Rican Experience**

Puerto Ricans were selected to be the main focus of this study because of a combination of characteristics and circumstances that make their experience significantly different from the experience of other Latino groups. Puerto Ricans represent the only Latino group coming to the United States from a territory that has been a colony for more than 500 years. Puerto Rico was a colony of Spain for 405 years and it has been a territory or colony of the United States for more than a century (Grosfogel, 2003; Pérez y González, 2000). This long history of social oppression is not necessarily a predictor of alcohol abuse among Puerto Ricans but, in our view, must be considered part of the macro context of the Puerto Rican experience, which may influence their drinking behaviors in indirect ways.

According to the existing literature, Puerto Ricans in the United States experience very severe health, employment, family and social dysfunction problems. After describing the progress and upward mobility associated with most Latino groups in the United States, Chavez (1991) made reference to the Puerto Rican exception. Reportedly, the Puerto Rican community trails all other Latino groups in almost all indicators of progress and well-being, and it scores lower than African-Americans on some indicators (Chavez, 1991).

The Puerto Rican experience in the United States is also characterized by high levels of stress associated with low social status, dark skin color, and Indian or African physical features (Montalvo, 1991), problems with ethnic identification (Mizio, 1979), racial biases that originate within the Puerto Rican community (Betances, 1993), and the adherence to cultural values such as machismo, which conflict with dominant U.S. values (Kane, 1981; Panitz, *et al.*, 1983). Thomas (1981), Manrique (1966), Rives Tovar (1980), Rodríguez (1980), Mohr (1982), and Steiner (1974) have also described the feelings of ambivalence, rejection, and identity confusion of Puerto Ricans that seem to result from Puerto Rico's colonial relationship with the United States, their minority status within this country, the mixed and conflicting messages they receive from the U. S. dominant society, and from the conflicting ways in which they often perceive themselves and the way they are perceived by the general population.

The above information strongly suggests that Puerto Ricans in the United States experience high levels of distress. At the same time, Puerto Ricans tend to be highly acculturated to the U.S. dominant culture given that even Puerto Ricans in Puerto Rico have been highly exposed to the U.S. Anglo culture for more than a century. For these reasons, it seemed logical to investigate their experiences of acculturation and stress as possible factors contributing to their alcohol abuse.

## **Theoretical Framework**

Research studies suggest that addiction to alcohol and other drugs is influenced by biological, genetic, cultural and environmental factors (Gottheil *et al.*, 1983; Bettes *et al.*, 1990; Johnson & Delgado, 1989). Nevertheless, in recent years there has been an increased interest in studying acculturation as a possible predictor of alcohol consumption among Latinos in the United States. Two models have emerged in an attempt to explain the high incidence of alcohol abuse and alcoholism among Latinos. The first is the *acculturative stress model*, which asserts that Latinos will consume more alcohol as a result of the stresses that accompany the acculturation process (Markides, Ray, Stroup-Benham, & Treviño, 1990; Wurzman, *et. al.*, 1983; Fernández-Pol, *et. al.*, 1985; Langrod, *et al.* 1981; Galán, 1981; Zayas, Rojas and Malgady, 1998; Rodríguez-Rivera,

2000). The second is the *acculturation model*, which proposes that increased alcohol drinking among Latinos will simply reflect the extent to which they have adopted the drinking norms and practices of the host/dominant society (Markides *et al.*, 1990; Welte and Barnes, 1995; Kail and Zayas, 2000).

The acculturative stress model would lead one to expect a higher incidence of alcohol abuse among Puerto Ricans experiencing higher levels of stress. According to this model, higher levels of stress should affect individuals in the middle of the acculturation continuum given that they are most likely to experience problems of confusion, unclear cultural identity, and rejection by members of the dominant groups in society and by their ethnic group of origin. The model proposes that confusion and rejection represent the basis for problem or excessive drinking.

On the other hand, the acculturation model would lead us to expect the frequency of alcohol consumption of Puerto Ricans to increase with higher levels of acculturation. This model proposes that alcohol consumption increases in frequency simply because Latinos are imitating the drinking behavior of members of the host/dominant society (Galván & Caetano, 2003). This model builds on the observation that in Latin America men tend to drink alcohol in larger amounts but with less frequency than their counterparts in the United States. As they become more Americanized or acculturated, they often end up adopting drinking patterns that combine the amounts of alcohol they used to consume per episode in their countries of origin with the frequency of drinking more characteristic of the United States. As a result, their overall alcohol consumption increases significantly.

Culture Conflict Theory is the third model making up the theoretical framework for this study (Galán, 1981). This theory agrees with the Acculturative Stress Model in proposing that individuals in the middle of the acculturation continuum are most likely to engage in excessive drinking. According to this perspective, individuals experiencing conflicts between the norms and behaviors of their culture of origin and the cultural norms and behaviors of their new host/dominant society, are most likely to experience high levels of distress and to become marginalized. It has been proposed that such condition of marginalization and high stress will lead to excessive drinking.

The primary purpose of this article is to take the previously-mentioned debate a step further by exploring the phenomenon of alcohol abuse among Puerto Ricans, a subgroup of the Latino population in the United States with a unique combination of problems and characteristics. This article attempts to provide insights into the validity of the “acculturation model”, the “acculturative stress model” and “culture conflict theory” when applied to the experience of Puerto Ricans. This article also intends to explore the extent to which these different theoretical models represent an improvement over traditional approaches as they attempt to explain and predict alcohol abuse among Puerto Ricans.

## **Methodology**

This article is based on a secondary analysis of data of an exploratory and descriptive study conducted utilizing a cross-sectional survey. The survey relied on a non-probability sample of one hundred Puerto Rican alcohol users. Subjects were contacted with the assistance of agencies providing a range of alcoholism and other services to Latinos in the cities of Holyoke, Leominster, Springfield, Westboro and Worcester, Massachusetts. An effort was made to include males and females and Puerto Ricans born in Puerto Rico and in the United States. Subjects came from the staff and client populations of two community-based social service agencies servicing primarily Puerto Ricans and other Latinos, an outpatient substance abuse program within a mental health center, and from a residential treatment and detoxification center for alcoholics and other drug addicts. These different sources of subject referrals were utilized in an effort to obtain a diverse sample. The eligibility criteria for participation in this study were: at least one of the subject's parents needed to be Puerto Rican, subjects had to be at least 18 years of age, and they were expected to consume alcoholic beverages. A decision was made to exclude Puerto Ricans who completely abstained from alcohol because usually those who abstain for religious or other value-based reasons may not drink alcohol regardless of their level of acculturation or level of acculturative stress. Consequently, they would make it impossible for us to discover if there is co-variation between alcohol consumption and other variables.

Subjects who volunteered to participate in this study were required to sign a consent form in either English or Spanish. None of them were paid for their participation. Many of them had never received treatment for their alcohol use, others were initiating treatment and others were near the completion of it. In all cases, however, data was collected on drinking behaviors prior to treatment or current treatment.

Study participants were highly cooperative during the interviews, which usually lasted between 30 and 45 minutes. Only seven individuals who were invited to participate refused to do it for various personal reasons. This researcher personally conducted all 100 interviews in an effort to ensure consistency in the explanation of concepts, promote accuracy, and make possible the participation of subjects with limited or no reading skills. Interviews were conducted in either English or Spanish depending on the preference of the subject. The data collection was completed before the Christmas holidays in order to avoid changes in drinking patterns due to the holiday season.

The collected data can be classified into four categories:

1. Anonymous demographic information.
2. Information about the frequency and amount of alcohol and other drugs consumed.
3. Information about culture-related behaviors, which were used to determine levels of acculturation.
4. Information about behaviors and recent experiences, which were used to measure levels of acculturative stress.

### *Operational Definitions*

1. Puerto Rican. Person of with at least one Puerto Rican parent and who identifies himself/herself as such.
2. Acculturation. Process through which the values and behaviors associated with a person's culture of origin, are replaced with the values and behaviors of a new culture. A score on the LAECA acculturation scale ranging from 1 to 5 indicated degree of

- acculturation. A score of one was indicative of maximum traditionalism while a score of five was indicative of maximum acculturation.
3. Traditional Puerto Rican- Participant with a score between 1 and 1.75 on the LAECA acculturation scale.
  4. Fully Acculturated Puerto Rican– Participant with a score between 3.26 and 5 on the LAECA acculturation scale.
  5. Partially Acculturated Puerto Rican– Participant with a score between 1.76 and 3.25 on the LAECA acculturation scale.
  6. Length of Residence– number of years the person has lived in the United States.
  7. A drink– an ounce of hard liquor, four ounces of wine or 12 ounces of beer. Approximately 9 grams of absolute alcohol.
  8. Frequency of Drinking– number of days per month the person consumes alcoholic beverages.
  9. Amount of Drinking– number of drinks a person consumes in a 24-hour period.
  10. Acculturative Stress– Stress resulting from trying to adapt to a new cultural environment as indicated by a score on the Hispanic Stress Inventory, version I or II. The subscales that make up the Hispanic Stress Inventory measure Economic/Occupational Stress, Family/Cultural Conflict Stress, Marital Stress, and Parental Stress. Version I of the stress inventory also contains a subscale, which measures Immigration Stress. Standardized scores (Z scores) were used to compare overall acculturation stress given that version I on the inventory contained five subscales while version two contained only four.

### *Instrumentation*

A questionnaire developed by this researcher was utilized to collect demographic information and information about the frequency and amount of alcohol consumed by each subject.

The instrument utilized to measure levels of acculturation is the Los Angeles Epidemiological Catchment Area (LAECA) Acculturation Scale, which was developed by Burnam, Telles, Karno, Hough and Escobar (1987). The 26-item scale covers language familiarity and usage, ethnic interactions, activities that reflect lifestyle and culture-related traditions, ethnic identification



and ethnic background. Possible scale scores range from one to five. A score of one (1) represents the lowest and a score of five (5) represents the highest level of acculturation. The instrument's construct validity was evidenced by the strong relationship that was found between acculturation and generation level among United States-born Latinos, and between acculturation and number of years residing in the United States among immigrant Latinos.

Levels of acculturative stress were measured by the Hispanic Stress Inventory, which was developed and validated by Cervantes, Padilla, and Salgado de Snyder (1991). The instrument was found to possess content, construct, and criterion validity. Two versions of this inventory were created, one for immigrants and one for Latinos born in the United States. The first one was administered to Puerto Ricans born in Puerto Rico and the second one to Puerto Ricans born in the United States. Both versions of the inventory include subscales, which measure occupational/economic stress, parental stress, marital stress, and cultural/family conflict. In addition, the version for Latino immigrants includes a subscale, which measures immigration stress.

The LAECA acculturation scale as well as the Hispanic Stress Inventory were validated with Latino subjects from different ethnic backgrounds but had not been validated specifically for Puerto Ricans. For this reason, both instruments were pre-tested by the principal investigator with a group of Puerto Rican subjects prior to their use in this study and both were considered to possess face validity for Puerto Ricans by three different experts on Puerto Rican culture. In items 18 and 20–26 of the LAECA scale the word “Hispanic” was replaced with the words “Puerto Rican,” and the words “country of origin” were replaced with the words “Puerto Rico.” Criteria that influenced the selection of these two instruments included their clarity, easy scoring system, and the fact that instruments elicit data, which can be used to conduct sophisticated statistical tests.

Chronbach Alpha reliability tests were performed on all measurement instruments. The alpha level of reliability for the LAECA acculturation scale was 0.93. The alpha level of reliability for the Hispanic Stress Inventory (version 1) was 0.93 while the reliability level for version 2 of the same instrument was 0.91.

### *Data Analysis*

The strategy for data analysis in this study included running frequencies, correlations, multiple regressions, T tests, Analyses of Variance, Multivariate Analysis of Variance and Chi Squares were utilized on the full sample and on various sub-samples. This facilitated the comparison of subjects and subgroups on the bases of: male vs. female and Puerto Rico-born vs. United States-born. Comparisons were also made between subjects with low, medium and high levels of acculturation.

Standardized scores were calculated for all stress scores. This was necessary to make possible the comparison of scores from versions 1 and 2 of the Hispanic Stress Inventory. Version 1, which was administered to subjects born in Puerto Rico, contains 73 questions, and possible scores may range from 73 to 365. Version 2, which was administered to subjects born in the United States, contains 59 questions, and its scores could range from 59 to 295.

### **Findings**

#### *Relationship between Acculturation Levels and Frequency of Alcohol Consumption*

Findings suggest that partially acculturated Puerto Ricans do not drink more or less often than those who are traditional or highly acculturated. Furthermore, an Analysis of Variance, correlations, and multiple regressions strongly suggest that no significant relationship exists between acculturation and frequency of alcohol consumption for this sample.

Table 1 lists the mean frequency of alcohol consumption for sample subjects by acculturation group.

Table 1: Acculturation and Frequency of Alcohol Consumption

		Mean Scores
Acculturation Level	N	Drinking Days per Month
Low	26	19.2
Partial	60	14.9
High	14	18.5

$F(2, 97)=1.4, p=0.25$

A One Way Analysis of Variance comparing the means for the three acculturation groups found no significant differences in mean number of drinking days per month (see Table 1).

At the same time, acculturation score did not contribute significantly to variances on number of drinking days per month in multiple regressions conducted on the full sample and on sub-samples by gender, place of birth, and acculturation levels. The only variable which made a significant contribution to variances in number of drinking days per month was number of drinks per day,  $T=3.60$ ,  $p<0.01$ .

*Relationship between Level of Acculturation and Amount of Alcohol Consumed per Day*

A One Way Analysis of Variance revealed no significant differences in the amount of alcohol consumed per day by members of the three acculturation groups, as shown in table 2. Furthermore, no significant correlations were found between acculturation score and number of alcohol drinks per day for the full sample or for any of the three acculturation-groups.

Table 2: Acculturation Level and Number of Drinks per Day

Acculturation Level	n	Mean Scores
		Number of drinks per day
Low	26	20.0
Partial	60	21.5
High	14	14.4

$F(2, 97)=0.68$ ,  $p=0.51$

The mean number of drinks per month by acculturation group was calculated by multiplying the number of drinks per day, times the number of drinking days per month for each subject in the sample. No statistically significant differences were found, as shown on Table 3.

Table 3: Acculturation and Monthly Alcohol Consumption

Acculturation Level	N	Mean Number of Alcohol Drinks per Month
Low	26	478
Partial	60	463
High	14	317

$F(2,97)=0.33, p=0.72$

*Relationship between Levels of Acculturation and Stress*

Partially acculturated Puerto Ricans in the sample did not report significantly different levels of acculturative stress than more traditional or acculturated subjects.

Mean standardized stress scores (Z scores) were calculated for each acculturation group. Standardized stress scores were needed in order to compare the scores of versions I and II of the Hispanic Stress Inventory (Table 4).

Table 4: Acculturation Levels and Mean Standardized Stress Scores

Acculturation Level	N	Mean Z Stress Scores
Low	26	0.026
Partial	60	-0.002
High	14	-0.040

$F(2,97)=0.04, p=0.96$

The previous ANOVA found mean Z stress scores by acculturation group not to be significantly different. Furthermore, no significant correlations were found between Z stress scores and acculturation scores.

In order to further assess the relationship between acculturation and stress, a Multivariate Analysis of Variance was performed. The mean scores for the stress subscales by level of acculturation are found in Table 5.

Table 5: Acculturation Levels and Mean Scores for Different Types of Stress

Acculturation Level	N	Mean Scores on Types of Stress			
		Economic/ Occupational	Family/ Cultural	Marital	Parental
Low	26	28.9	42.2	31.1	22.8
Partial	60	34.1	47.5	32.7	21.4
High	14	32.7	58.8	35.5	23.8

$F(8,182)=2.71, p<0.01$

The previous analysis found significant differences among different types of stressors by acculturation group. Family/Cultural Conflict stress was the subscale primarily responsible for these differences  $F(2,94)=6.15, p<0.01$ . As observed in the previous table, highly acculturated subjects reported the highest levels of family/cultural conflict stress.

#### *Relationship between Level of Education and Alcohol Drinking*

Overall alcohol consumption for Puerto Ricans in the sample was found to decrease as their levels of education increased. Significant differences were also found in terms of number of drinks per day and drinking days per month for the three educational groups that subjects were assigned to.

Subjects were categorized according to their level of education. The mean number of drinking days per month and drinks per day were then calculated as shown in Table 6.

Table 6: Educational Level and Mean Frequency and Amount of Alcohol Consumption

Educational Level	N	Days Drinking per Month	Drinks per Day	Drinks per Month
Grades 1 to 6	12	25.0	35.3	932
Grades 7 to 12	72	16.5	20.0	433
Grades 13 to 19	16	9.8	9.5	142

$F(6,190)=3.22, p<.01$

As observed on the previous table, a Multivariate Analysis of Variance found significant differences in alcohol consumption among educational groups. More specifically, the analysis revealed that educational groups in the sample are significantly different in terms of their average number of drinking days per month  $F(2,97)=6.37, p<.01$ , their average number of alcohol drinks consumed per day  $F(2,97)=5.89, p<.01$ , and their average number of drinks per month  $F(2,97)=5.77, p<.01$ .

A negative weak correlation was found between years of education and drinking days per month for the full sample of Puerto Rican alcohol users,  $r= -.29, p=.05$ .

#### *Relationship between Length of Residence in the United States and Alcohol Drinking*

A weak positive correlation was found between length of residence in the United States and number of drinks per day for the full sample,  $r=0.19, p=0.03$ . At the same time, a Multiple Regression found Length of residence in the United States not to be a significant predictor of number of drinks per day,  $T= -0.112, p=0.91$ .

Frequency of alcohol consumption was found to slightly increase along with length of residence in the United States only among subjects born in the United States,  $r=0.37, p=0.03$ , and light skin subjects,  $r=0.28, p=0.04$ .

### *Relationship between Acculturative Stress and Alcohol/Drug Use*

A decision was made to also look for associations between stress and illegal drug use due to the fact that alcohol users often supplement or substitute alcohol use with illegal drug use.

Pearson correlations on the full sample (n=100) found positive but weak correlations between overall stress scores and number of alcohol drinks per day,  $r=0.38$ ,  $p<0.01$ , the number of drinking days per month,  $r=0.19$ ,  $p=0.03$ , and the number of days per month of illegal drug use,  $r=0.27$ ,  $p<0.01$ .

An analysis of the association between specific stressors and alcohol/drug use for the full sample found positive but weak correlations between Economic/ Occupational Stress and number of drinks per day,  $r=0.29$ ,  $p<0.01$ , number of drinking days per month,  $r=0.22$ ,  $p=0.03$ , and frequency of illegal drug use,  $r=0.22$ ,  $p=0.03$ .

Weak positive correlations were also found between Family/Cultural Conflict Stress and number of drinks per day,  $r=0.24$ ,  $p=0.02$ , and frequency of illegal drug use,  $r=0.28$ ,  $p=<0.01$ . Parental Stress was weakly correlated only to number of alcohol drinks per day,  $r=0.26$ ,  $p=0.01$ .

### *Stress and Alcohol/drug Use by Level of Acculturation*

An exploration of the association between alcohol/drug use, stress and level of acculturation revealed:

1. Only partially acculturated subjects had a tendency to consume more drinks per day as their stress levels went up,  $r=0.46$ ,  $p<0.01$ .
2. The number of drinking days per month significantly increased as Z stress scores went up only among highly acculturated subjects,  $r=0.64$ ,  $p<0.01$ .
3. Standardized stress scores were found to be a significant predictor of frequency of illegal drug use only among partially acculturated subjects,  $F=7.82$ ,  $p<0.01$ .

This researcher proceeded to explore the associations between alcohol/illegal drug use and particular types of stress, by level of acculturation. The findings of such exploration suggest that:

1. Economic/Occupational Stress is strongly correlated with number of drinking days per month only among highly acculturated subjects,  $r=.51$ ,  $p=0.03$ .
2. Family/Cultural Conflict Stress was weakly correlated with number of drinks per day only among partially acculturated subjects,  $r=.34$ ,  $p<0.01$ .
3. Family/Cultural Stress was weakly correlated with number of drinking days per month among partially acculturated subjects,  $r=.30$ ,  $p=0.01$ .
4. Family/Cultural Conflict Stress was a significant predictor of number of drinking days per month only for partially acculturated subjects,  $t=2.15$ ,  $p=0.04$ .
5. Marital Stress was weakly correlated with number of drinks per day,  $r=0.22$ ,  $p=0.045$  and number of drinking days per month,  $r=0.22$ ,  $p=0.05$ , only among partially acculturated subjects.
6. Marital Stress was weakly correlated with frequency of illegal drug use only among low acculturation subjects,  $r=0.33$ ,  $p<0.05$ .
7. Parental Stress was weakly correlated with number of drinks per day only among partially acculturated subjects,  $r=0.41$ ,  $p<0.01$ .
8. Parental Stress was a significant predictor of number of drinks per day only for partially acculturated subjects,  $t=2.42$ ,  $p=0.02$ .

## **Discussion**

### *Limitations of this Study*

The limitations of this study include its reliance on a non-probability sample and the small size of some sub-samples. These conditions compromise external validity and increase the likelihood of sampling error. We must remember, however, that as an exploratory study, the primary objective of this piece of work is to provide insights and identify associations between variables that could be further studied in future research and not to generalize findings to a larger population.

### *Potential Sources of Sample Bias*



An effort was made to identify potential sources of sample bias given that the study did not rely on a random sample. Factors taken into account for this analysis include:

1. Self-selection for participation in the study

Reliance on voluntary participation may have diminished the likelihood of obtaining false or inaccurate information but at the same time it may have also lead to sampling bias.

2. Place of birth

As shown in the following table, the percentage of sample subjects born in Puerto Rico and the United States is no representative of those percentages at the county, state and national levels. Our sample was, for the most part, born in Puerto Rico.

Table 7: Puerto Ricans by Place of Residence and Place of Birth

Location of Concentration	Born in Puerto Rico		Born in the U. S.		Totals	
	n	%	n	%	n	%
Two County Area	34,266	55	28,063	45	62,363*	100
Massachusetts	81,644	55	68,036	45	151,193*	100
United States	1,190,533	44	1,537,221	56	2,727,754*	100
Our Sample	74	74	26	26	100	100

\*Census Bureau (1990)

Our sample was drawn from human service agencies located in Hampden and Worcester counties in the State of Massachusetts. Seventy-four percent of subjects in this study's sample were born in Puerto Rico and 26% were born in the United States. The above-mentioned data shows that Puerto Rico-born subjects were over-represented in this study. It is not known, however, what percentage of the overall Puerto Rico-born population consumes alcohol and to what extent they are represented in this research sample.

### 3. Gender

An attempt was made to discover if the gender composition of this study's sample was representative of the larger county, state, and national Puerto Rican population. Table 8 summarizes data dealing with gender.

Table 8: Puerto Ricans by Place of Residence and Gender

Residence	Male		Female		Total	
	N	%	n	%	n	%
Massachusetts	72,822	48.16	78,371	51.84	151,193*	100
United States	1,332,101	48.83	1,395,653	51.16	2,727,754*	100
Our Sample	66	66.00	34	34.00	100	100

\*Census Bureau (1990)

The previous table clearly shows that males were over represented in our study. However, it is not known with precision, what is the proportion of male and female alcohol users in the general Puerto Rican population.

### 4. Stress levels

Acculturative stress scores for Puerto Rican alcohol users in this study's sample were compared to the scores of a group of 493 Latinos who participated in the process of validation for the Hispanic Stress Inventory.

Table 9: Mean Acculturative Stress Scores for Two Different Samples According to the Hispanic Stress Inventory

Stress Scores	Sample of Latinos from Different Countries		Sample of Puerto Rican Alcohol Users	
	Immigrant (n=305)	U.S. Born (n=188)	Immigrant (n=74)	U.S. Born (n=26)
HIS Total	122.06	96.22	154.32	152.27

Marital	21.41	19.06	31.72	31.27
Econ/Occ	24.98	21.42	28.27	38.19
Parental	17.07	11.77	24.93	14.04
Fam/Cul	25.57	43.97	33.40	68.77
Immigrant	33.02	***	36.00	***

The data used in the previous table was obtained from Cervantes, Padilla, & Salgado de Snyder (1991) and from the current study. The data shows that this study's sample of Puerto Rican alcohol users had higher levels of every type of stress than the sample of Latinos interviewed for the validation of the Hispanic Stress Inventory. We do not know, however, how many of the 493 Latinos who participated in the validation of the Hispanic Stress Inventory were alcohol drinkers or illegal drug users.

#### 5. Sampling strategy

The fact that most subjects in this study were contacted through alcohol and/or drug treatment centers suggests that this sample contained more heavy alcohol drinkers than the general population and people who are more self aware about their drinking.

#### 6. Other demographic characteristics

Subjects in the sample of Latinos who participated in the validation of the Hispanic Stress Inventory were residents of Los Angeles, California and were chosen for participation through self-selection. Three hundred and five (305) were immigrants and 188 were born in the United States. Table 10 compares that sample of Latinos with the sample of Puerto Ricans included in our study in relation to key characteristics.

Table 10: Two Samples of Latinos Compared on Key Characteristics

Demographic Characteristics	Latinos from Different Countries who Participated in the Validation of the Hispanic Stress Inventory	Puerto Rican Alcohol Users who Participated in the Current Study
Gender		
Male	255 (52%)	66 (66%)
Female	238 (48%)	34 (34%)
Age		

Range	17 – 56 years	18 – 66 years
Mean	23 years	34 years
Education		
Mean	13 years	10 years
Monthly income	\$464 per person	\$795 for family
Marital status		
Married	13.6%	18%
Single	79.6%	34%
Divorced	4.0%	26%
Common-law	***	22%

As observed on table 10, the sample of Latinos who participated in the process of validation for the Hispanic Stress Inventory is different from this project's sample of Puerto Rican alcohol users in several ways. The Puerto Rican sample exhibited higher levels of stress, a higher proportion of males, older age, lower level of education, higher income, and higher percentages of married and divorced individuals.

### **Implications for Theory and Research**

Findings from this study provide no support for the acculturation model, and little support for the Acculturative Stress Model and for Culture Conflict Theory. No significant findings were made suggesting an association between level of acculturation and alcohol consumption. At the same time, the overall stress scores of our three-acculturation groups did not significantly differ. Some differences were found, however, in terms of the particular stressors affecting different acculturation groups. Those particular stressors were, in turn, weakly associated with higher alcohol consumption.

These findings make evident the difficulties associated with trying to make empirical generalizations about Puerto Ricans in the United States. They also highlight the limitations and inadequacies of existing overly simplistic models attempting to describe and predict the drinking behaviors of Puerto Ricans and other Latinos in the United States.

The findings of this study raise the question of whether existing models attempting to explain and predict alcohol abuse among Puerto Ricans and other Latinos represent an improvement

over a demographic characteristics model researchers could create by combining a few key variables. Our study findings, our literature review and the feedback received from colleagues suggest that factors such as level of education, income, place of birth, length of residence in the United States, religious affiliation and levels of religiosity may be as effective at predicting alcohol abuse among Puerto Ricans as any of the most commonly used theoretical models. A reason why none of the models forming the theoretical framework for this study seem to possess great predictive validity related to alcohol abuse among Puerto Ricans may be that they do not take into account differences in cultural backgrounds and in the particular migration and survival experiences in the United States. Consequently, an appropriate course of action for social workers and other social and behavioral scientists may be to work on the development of multivariate theoretical models that are ethnic group specific and sensitive to the uniqueness of experiences of individuals within those groups. It is hoped that this article will represent a step towards that goal.

### **Implications for Policy**

The statistics related to alcohol abuse and alcoholism presented at the beginning of this article clearly show that alcohol abuse among Puerto Ricans in the United States, as a social problem, has the potential of eventually reaching catastrophic proportions. Such danger dictates that social workers and other helping professionals should work diligently to identify factors contributing to the incidence and prevalence of this health and social ailment.

Social and behavioral scientists work on an ongoing basis to identify psychosocial factors associated with the alcohol consumption of Puerto Ricans and other Latinos in order to inform the decisions of policy-makers and of those who delivery services. For this reason, the difficulties associated with identifying valid theories and predictors of the social problem at hand are disturbing. How can anybody develop and implement effective programs and interventions to help Puerto Ricans, Mexican-Americans, African-Americans or any other minority group if we do not exactly know what the causes of the problem are? We must be concerned with theory and knowledge building if we want to be effective agents for social change.

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