Cultural Phenomena and the Syndemic Factor: Substance Abuse, Violence, HIV and Depression Among Hispanic Women

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Abstract:

Researchers exploring the health of Hispanics in South Florida utilizing a combination of qualitative and quantitative research methods have identified that substance abuse, violence, risky sexual behavior, and depression are not only conceptualized as tightly interrelated health and social problems, but also hold together in a measurement model to represent an underlying phenomenon (i.e., the Syndemic Factor). The purpose of this study is to test hypothesized relationships between cultural phenomena and the Syndemic Factor among community-dwelling Hispanic women. Standardized questionnaires assessing Acculturation, Hispanic Stress, Familism, and the Syndemic Factor were administered to a cross-sectional sample of 548 Hispanic women from South Florida. Structural equation modeling was used to analyze relationships. The model explained 61 percent of the variance in the Syndemic Factor. There was a large positive relationship between the Syndemic Factor and Hispanic Stress, and a small inverse relationship between the Syndemic Factor and Familism. Women with high Hispanic Acculturation and low U.S. Acculturation scored lower on the Syndemic Factor than Integrated/Bicultural women. Familism buffered the relationship between Hispanic Stress and the Syndemic Factor. Structural, community, family, and individual prevention strategies that address underlying conditions associated with the Syndemic Factor must be developed and formally evaluated.

Keywords: Syndemic Factor | Substance Abuse | Violence | HIV | Depression | Hispanic Women

Article:

INTRODUCTION

Hispanics living in the United States experience health disparities related to substance abuse, violence, risky sexual behavior, and depression. For example, Hispanics have higher reported rates of binge drinking (SAMHSA 2006), intimate partner violence (IPV) (Caetano et al. 2005), and

HIV when compared to non-Hispanic whites (Centers for Disease Control and Prevention [CDC] 2011). Although Hispanics have comparable rates of mental health disorders, such as depression, to non-Hispanics (SAMHSA 2006), Hispanics appear to suffer more negatively from mental health problems when affected by other problems such as IPV (Caetano and Cunradi 2003). It has been suggested that substance abuse, violence, risky sexual behavior, and depression do not occur in isolation among Hispanics, but rather cluster together to comprise a syndemic (Gonzalez-Guarda et al. 2011b). A syndemic is a complex web of interacting, mutually enhancing epidemics tied together by common risk and protective factors (Singer 1996, 2009). Researchers exploring the behavioral and mental health of Hispanics in South Florida utilizing a combination of qualitative and quantitative research methods have identified that substance abuse, violence, risky sexual behavior, and depression are conceptualized by community-dwelling women and men as tightly interrelated health and social problems with common causes (Gonzalez-Guarda et al. 2010, 2011c). These qualitative data have driven quantitative research documenting that substance abuse, violence, risky sexual behavior, and depression hold together in a measurement model to form a latent factor—the Syndemic Factor—thus suggesting that these conditions represent an underlying phenomenon (Gonzalez-Guarda et al., 2011c). The combination of these findings add support that a substance abuse, violence, risky sexual behavior, and depression syndemic exists from both an emic and etic perspective.

Exploring the role that culturally related phenomena may play in placing Hispanics at risk or protecting them from syndemics is paramount to understanding and addressing health disparities among this population (Gonzalez-Guarda 2009). Previous qualitative research with Hispanics in South Florida has identified various cultural phenomena such as the acculturation process, stressors relating to being Hispanic in the United States, and close-knit families as being related to various behavioral and mental health conditions (Gonzalez-Guarda et al. 2010, 2011c). For example, in a qualitative study of Hispanic adult women in South Florida, one participant explained, "Here, the young people are very liberated. Here, everything is liberal. Here, everything is normal, children leave their homes, they get pregnant, they have sex with other partners, they smoke or take drugs, Like, it is all so normal" (Gonzalez-Guarda et al. 2011c:48). The purpose of this study is to test hypothesized relationships between Acculturation, Hispanic Stress, and Familism, and substance abuse, violence, risky sexual behavior, and depression (i.e., the Syndemic Factor) among a community sample of Hispanic women.

SYNDEMIC FRAMEWORK

Merrill Singer coined the term "syndemic" (Singer 1996) as a way to describe multiple, simultaneous, interwoven health problems occurring in populations also experiencing less than optimal physical and social conditions that increase the burden of disease among that population (Singer 2009:14). Within the context of a syndemic, the adverse effects of multiple epidemics or conditions are exacerbated by their co-occurrence. Singer's seminal work identified the first syndemic, the Substance Abuse, Violence, and AIDS (SAVA) syndemic, among poor inner city Hartford, Connecticut residents, primarily Hispanics and African Americans. In this community he observed a collection of interrelated circumstances (e.g., poverty, loss of adequate housing, family instability, drug-related violence, inequitable health care) that were related to an increased risk for and acquisition of AIDS and a collection of other diseases (Singer 1996). A syndemic differs from traditional concepts of comorbidity in that two or more health issues interact with social and poor physical conditions to increase the burden of disease among vulnerable populations

(Singer 2009). Singer maintains that health-care providers and public health workers cannot focus on only one of the components of a syndemic, but must address all factors if the syndemic is to be addressed effectively (Singer 2006). The CDC's establishment of the Syndemic Prevention Network, a group of researchers, citizens, and government officials committed to safeguarding public health, provides evidence that a syndemic orientation is viable and important to addressing health disparities (CDC 2008).

A recent review of the literature further elucidated the nature of the SAVA syndemic among women. SAVA's influence on several conditions was examined, including HIV-related risk behavior and mental health (Meyer et al. 2011). Overall, substance abusing women were more acculturated and educated, engaged in greater sexual risk behavior, and were significantly more likely to have experienced physical or sexual violence. The reciprocal nature of SAVA is exemplified by the findings that women who experienced violence were more likely to become substance abusers, and increased sexual risk behavior was correlated with substance abuse, IPV, and depression among women reporting those conditions concurrently. Socioeconomic factors were also impactful, as women who were in unstable housing and abusing substances were more likely to experience violence, regardless of HIV serostatus. Researchers argue that, among Hispanics, a syndemic orientation may provide an increased understanding of the relationships between the SAVA syndemic and mental health (Gonzalez-Guarda et al. 2008; Kurtz 2008). Recently scholars have developed conceptual models that describe and provide empirical support for syndemics, documenting that substance abuse, violence, risky sexual behavior, and depression represent an underlying phenomenon (i.e., the Syndemic Factor) among Hispanic women (Gonzalez-Guarda et al. 2011a, 2011c), and that these clustering epidemics disproportionately affect marginalized populations, such as men who have sex with men (MSM), by having a synergistic effect on increasing health risk (Stall et al. 2003). Although great progress have been made in understanding syndemics, more research is needed to uncover underlying phenomena that may give rise to these health and social disparities. This study aims to expand the conceptual basis for syndemics experienced by Hispanics by first testing whether cultural phenomena associated with being Hispanic in the United States are linked to the Syndemic Factor, and second, testing one possible avenue to mitigate the negative effects of these links. A sample of adult Hispanic women participating in a large HIV prevention trial that collected information regarding cultural phenomena and behavioral and mental health conditions was used to explore these relationships.

REVIEW OF THE LITERATURE

Acculturation

Acculturation is not a simple unidimensional process. Scholars have provided multiple conceptualizations of the acculturation process. These have ranged from descriptions of acculturation as a bipolar process (i.e., becoming more "American" and, therefore, less "Hispanic") to one that has multiple dimensions and allows for blending between cultures (Marin and Gamba 1996; Schwartz et al. 2010). Berry (1997) proposed a framework to understand the acculturation process as having four acculturation strategies or orientations. Integrated refers to preserving the culture of origin and embracing practices of the receiving culture. Separated refers to retaining values from the culture of origin, but not adopting practices from the receiving culture. Assimilated, the converse of separated, refers to adopting practices from the receiving culture, but not holding to values from the culture of origin. The fourth orientation, marginalization, refers to

adhering to practices of either culture. Berry (1997) and other research groups (Gallo et al. 2009) have stated that in general, the Integrated/Bicultural strategy results in the most ideal equilibrium between integrating into the host culture and retaining practices of the culture of origin. Nevertheless, acculturation is often studied as a single dimension, heavily relying on language-based measures and failing to conceptualize the multidimensional process of cultural exchange between an individual's country of origin and her host country (Gallo et al. 2009).

Research investigating the relationship between acculturation and behavioral and mental health among Hispanics has documented mixed results. As Rogler et al. (1991) noted in their literature review, positive, negative, and curvilinear (i.e., bicultural levels being the most protective) relationships have been documented by researchers investigating the relationships between acculturation levels and the mental health of Hispanics. More than 20 years later, it still appears that the ambiguous nature of these relationships persists. For example, researchers have found that the higher the acculturation to the United States, the greater the sexual risk behaviors of the women (Moreno and El-Bassel 2007). Specifically, acculturation has been associated with an increase in sexual partners and in partners' HIV risk behaviors (Loue et al. 2003; Rojas-Guyler et al. 2005). Substance abuse and IPV have also been found to be positively associated with U.S. Acculturation among Hispanic women (Caetano et al. 2007).

Nevertheless, behavioral risk factors also have been documented among Hispanic women with low Acculturation to U.S. culture. Women with lower acculturation levels are less likely to be educated and less likely to use condoms than counterparts with higher acculturation (Moreno and El-Bassel 2007). Consequently, although less acculturated Hispanic women may have fewer sexual partners (Loue et al. 2003; Rojas-Guyler et al. 2005), it appears that they are less likely to use condoms with the partners that they do have. Hispanic women with lower levels of acculturation also have been found to exhibit an unrealistic assessment of their own risks for HIV infection due to unawareness of their partners' extra-relational sexual activities and lower levels of HIV knowledge (Loue et al. 2003). They may also be at increased risk for HIV infection due to their lower levels of sexual communication and negotiation skills (Rojas-Guyler et al. 2005). They have also been found to score higher on depression scales when compared to more highly acculturated women (González et al. 2001).

Among Hispanic women, it appears that the relationship between acculturation and risk may vary according to the health behavior or condition being considered. It may also be possible that the inconclusive nature of these findings may be related to the fact that acculturation has often been studied in isolation from other phenomena (e.g., the climate toward Hispanics in geographical regions across the United States) that may also influence the behavior and mental health of Hispanics or the effects that acculturation has on these (Rogler et al. 1991). More research is needed to clarify the complex relationships between the acculturation process, other phenomena that influence experiences Hispanics have in the United States, and syndemic conditions.

Hispanic Stress

Hispanics in the United States represent a very heterogeneous group of individuals with origins in Spain or Spanish-speaking Latin America with varying countries of origin, ethnicity, acculturation levels, and cultural practices. Nevertheless, some scholars have found that this heterogeneous group experiences some common stressful events relating to being members of an ethnic minority group in the United States. Examples of these stressful events are problems with linguistic differences, changing personal and family values, changing gender role expectations, ability to

meet daily needs, and immigrant status (Cervantes et al. 1991). There is a long tradition of research linking stress in general to a number of adverse outcomes. Dressler has quantified cultural consonance, the measure of agreement between individual behavior and cultural models, and has found that lower levels of cultural consonance are associated with higher perceived stress, in addition to depression and physical health indicators such as high blood pressure (Dressler 2004, 2012; Dressler et al. 2007). Among Hispanic women, Ickovics et al. (2002) found a positive association between higher stress, as measured by the community-based Inventory of Current Concerns (Nyamathi and Flaskerud 1992) and increased partner risk for sexually transmitted infections (STIs) (e.g., uncommitted relationships and unprotected intercourse). Acculturative stress, the stress associated with acculturating to the United States, has also been found to partially mediate the relationship between acculturation and risk for IPV among Hispanic women (Caetano et al. 2007). For example, among Hispanic women acculturation is inversely related to stress, which in turn is positively related to IPV. Nevertheless, research on the relationship between other types of stressors Hispanics may encounter and the behavioral and mental health of Hispanics is lacking.

Familism

Familism focuses on family unity among Hispanics and the belief that the family is interdependent, cooperative, and prioritized over an individual (Schwartz 2007). Familism is a multidimensional idea consisting of behavioral, structural, and attitudinal components and can directly influence health behaviors (Steidel and Contreras 2003). High levels of Familism mean that each member of the family has responsibilities and loyalties to the family unit and family members are consulted regarding health advice and important family decisions (Burk et al. 1995). The idea of Familism places the mother in the role of nurturer and protector of her children, which may lead her to put her children's needs above her own. In theory, Hispanic women with higher levels of Familism will have increased protection against sexual risk taking and consequently increased protection against HIV risk. Consistent with this perspective, Landau et al. (2000) found that increased knowledge and contact with family reduced the levels of sexual risk taking in their sample of Hispanic women.

Another way that Familism could benefit women is through a stress-buffering effect. The possibility of a buffering effect is similar to stress and coping theory (e.g., Cohen 2004). Support from the family, which could be conceptualized as a coping resource, may be particularly beneficial for women who experience high levels of stress. The direct relationships between reported levels of Familism, HIV risk, substance abuse, violence, and depression in addition to the role this cultural phenomenon may play in mitigating the effects of stress on behavioral and mental health outcomes need to be further addressed in the literature.

The current research was designed to address some of the aforementioned gaps in the literature concerning Hispanic women and substance abuse, HIV risk, violence, and depression (i.e., the Syndemic Factor). We tested the following research hypotheses: (1) Hispanic Stress will be positively related to the Syndemic Factor. (2) Family Support will be inversely related to the Syndemic Factor. (3) Acculturation will be related to the Syndemic Factor, such that (a) the Syndemic Factor will be greater for Separated women than Integrated/Bicultural women, and (b) greater for Assimilated women than Integrated/Bicultural women. (4) Family Support will moderate the relationship between Hispanic Stress and the Syndemic Factor.

METHODS

Design

Standardized, cross-sectional questionnaires were administered to participants of SEPA II (Salud, Educación, Prevención y Autocuidado—Health, Education, Prevention, and Self-Care), a randomized control trial of a group intervention designed for Hispanic women in the United States to reduce HIV risk, during their baseline assessments. These questionnaires were administered in English or Spanish to participants via face-to-face interviews conducted by bilingual, female study personnel between January 2008 and April 2009. All Spanish versions of measures used had been translated using a translation, back-translation, and verification process and found to be valid and reliable in previous studies (Peragallo et al. 2005; 2012). Although participants were followed for a 12-month period, only baseline assessments are used for this study because the SEPA intervention aimed to modify some of the variables of interests including HIV risk and IPV.

Table 1. Participant Characteristics and Syndemic Indicators (N = 548)

Variables	*M*	*SD*
Age	38.48	8.53
Years in United States	11.41	10.33
Depression	16.41	12.91
Partner violence	0.39	0.52
Lifetime abuse	1.07	1.49
Partner risk	0.15	0.36
Hispanic Stress	14.63	9.57
Family Support	4.01	0.74
	N	*%*
Employed	180	33
Family income < $2000/month	376	69
Community violence	140	26
STI history	37	7
Consistent condom use	84	15
Substance use	70	13

Note. Frequency (%) for positive answers shown for dichotomous variables.

Sample and Setting

The sample consisted of 548 women from South Florida identifying as Hispanic or Latino, between the ages of 18 and 50, and reporting sexual activity in the past three months. A large proportion of the sample was recruited from a community-based organization (CBO) providing social services (e.g., English classes, childcare, tax assistance) to Hispanic, immigrants. Study personnel also recruited from other community-based settings (e.g., libraries, community clinics, churches) by posting flyers and making individual and group presentations about the study. Snowball sampling

methods were also used (i.e., study participants were encouraged to tell family and friends). Assessments were conducted at the CBO and two study offices located in downtown Miami and Hollywood, FL. Table 1 summarizes characteristics of participants in this study.

Procedures

IRB approval was obtained for all study related activities. Candidates were screened for eligibility and scheduled over the phone for assessments. Upon meeting with candidates for their baseline assessments, assessors described study procedures, obtained informed consent, and completed the baseline assessment using a research management computer software system (Velos). These assessments took approximately three hours to complete. Participants were compensated $50 for their time and travel.

Measures and Variables

Control variables

Demographic information (e.g., country of origin, years living in the United States, income, health insurance status) was collected at the beginning of the assessment. The proportion of years lived in the United States and education was included as control variables based on findings from previous studies (Gonzalez-Guarda et al., 2011c). Education was dummy-coded (1 = at least a high school education, and 0 = less than a high school education).

Acculturation

The Bidimensional Acculturation Scale (BAS; Marín and Gamba 1996) was used to measure acculturation. This scale consists of 24 items that measure how acculturated Hispanics are to the U.S. culture (Americanism) and their culture of origin (Hispanicism). Examples of Americanism items are as follows: "how often do you speak English with your friends?" "How often do you watch television programs in English?" "How well do you write in English?" To score the BAS the 12 items that measure each cultural domain are averaged separately. Validity is supported by high correlation with criteria previously used for developing acculturation scales (Marín and Gamba 1996) in a sample of participants of Mexican and Central American heritage. In this study, the BAS demonstrated a high reliability for both the Hispanicism and Americanism subscales (Cronbach's α = .85 and .95, respectively). Scores for each domain can range from 1 to 4, with a score of 2.5 used as a cut-off point for low or high cultural activities. Berry's (1997) framework for understanding acculturation was used to assign women to three mutually exclusive categories: Separated (high Hispanicism, low Americanism), Assimilated (high Americanism, low Hispanicism), and Integrated/Bicultural (high Hispanicism, high Americanism). The marginalized (low Hispanicsim, low Americanism) was not used because no one fell under this category. For analysis, dummy variables were created for each group with Bicultural as the comparison group.

Hispanic stress

The Hispanic Stress Inventory (HSI; Cervantes et al. 1991) was used to assess Hispanic Stress. The immigrant version of this scale was used given the vast majority of the women in the study

were immigrants (94 percent). The original version consists of 73 items divided into five subscales (Economic Stress, Parental Stress, Family/Cultural Stress, Marital Stress, and Immigration Stress). Examples of items on the Hispanic Stress Scale: "I have felt unaccepted by others due to my Latino culture." "Because of my poor English, people have treated me badly." "I have felt that I would never regain the status and respect that I had in my home country." The Parental Stress subscale was not used in this study because not all the participants were parents. These subscales demonstrated high reliability (Cronbach's α = .74, .80, .74, .83, respectively). The four subscales were summed to create a total Hispanic Stress Scale; this scale was log transformed for analyses to account for positive skew.

Familism

Familism was assessed through use of the Familism scale (Sabogal et al. 1987). This scale was created to assess the Hispanic cultural value that emphasizes the important role of family and loyalty and responsibility to family. The scale contains 15 items organized into three subscales: (1) Family Obligations (six items) indexes perceived obligation to assist the family (e.g., "A person should share her home with uncles, aunts or first cousins if they are in need"), (2) Family Support (three items) assesses beliefs that the family should be a source of social support (e.g., "One can count on help from her relatives to solve most problems"), and (3) Family as Referent (five items) assesses the belief that relatives should be used as behavioral and attitudinal referents (e.g., "One should be embarrassed by the bad things done by members of his family"). Reliability was not acceptable for two subscales, Familial Obligations (Cronbach's α = .61) and Family as Referent (Cronbach's α = .57), but was acceptable for Support from Family (Cronbach's α = .70). Consequently, Support from Family was the only subscale used.

Substance abuse

An adapted form of the 9-item Substance Abuse Behavior Questionnaire (Kelly et al. 1994) was administered. For this study, a scale was created with three items: frequency of alcohol and illicit drug use (two questions) and being drunk or high before sex (one question) in the past three months. This subscale demonstrated good reliability (Cronbach's α = .77). Due to extreme positive skew, this variable was coded as 0 (never on all items) and 1 (i.e., endorsing any item such as reporting being drunk before sex at least once in the past three months) for analysis.

Violence

Three variables were used to measure exposure to violence: lifetime exposure to abuse, community violence, and partner violence. Data on lifetime exposure to abuse and community violence were collected with the Violence Assessment, developed for a previous HIV risk reduction efficacy trial of SEPA (Peragallo et al. 2005) and adapted in a subsequent pilot study (Gonzalez-Guarda et al. 2008). The lifetime exposure to abuse scale summed six items of participant reports of ever having been physically, sexually, or psychologically abused during childhood (i.e., before age 18) and adulthood by someone other than a romantic partner. This subscale had good reliability (Cronbach's α = .74). Community violence (one item) asked participants to report if they had ever lost a close friend or relative to a violent death, that is, suicide, homicide, or a substance abuse related accident (1 = yes, 0 = no). Although a fuller measurement of community violence that a

woman might encounter was not feasible to administer in this study, this measure did provide information about the woman's environment. Partner violence was ascertained with the Partner-to-You (victimization) 10-item subscale of the Revised Conflict Tactics Scales, one of the most widely used instruments to measure IPV (CTS2; Straus and Douglas, 2004). The IPV subscale demonstrated strong reliability (Cronbach's α = .86). To correct for positive skew, the square root of lifetime abuse and partner violence were used in analyses.

Risk for HIV

Two variables were used to measure risk for HIV: partner's risk for HIV and STI history. The Partner Table (Gonzalez-Guarda et al. 2008), which gathered information regarding the characteristics (e.g., demographics) and sexual behaviors of the participants' past five intimate relationships, was used to capture most recent partner's risk for HIV. Partner risk was assessed with six items, which asked participants to report whether their partner was ever drunk or high (during and not during sexual intercourse, four items), ever injected drugs (one item), and had sex with IV drug users, men, or commercial sex workers (three items). This scale had good reliability (Cronbach's α = .78). The square root of partner risk was used for analysis due to positive skew. A health and sexual history was taken in which participants were asked their lifetime exposure to a list of STIs. Participants reporting diagnoses of one or more STIs in their lifetimes were coded as positive history of an STI (1 = positive, 0 = negative).

Depression

The Center for Epidemiologic Studies Depression Scale (CES-D; Radloff 1977) was administered to assess depressive symptoms. This scale consists of a total of 20 questions asking participants to report the frequency (i.e., number of days in the past week) of experiencing depressive symptoms (e.g., not able to shake off the blues, having a hard time concentrating). Responses are added for a total score ranging from 0 to 60 points. Although this scale was used as a continuous measure, scores of 16 and above indicate a likelihood of clinical depression. This scale is widely used in population-based and community studies and has been translated and validated in Spanish (Roberts 1980). The CES-D demonstrated very good reliability (Cronbach's α = .94).

Analysis Plan

Hypotheses were tested using SEM with Mplus 5.21 (Muthén and Muthén, 2007). Maximum-likelihood estimation was used to allow for the inclusion of all participants with missing data on endogenous variables. Previous analysis of SEPA II baseline data supported the proposition of a latent underlying variable composed of substance abuse, violence, risk for HIV, and depression representative of a syndemic (Gonzalez-Guarda et al. 2011b). Preliminary analyses used ANOVA and Bonferroni post-hoc tests for differences in Hispanicism, Americanism, percent years lived in the United States, and Hispanic Stress between women in the different acculturation orientations. Hypotheses were tested with a series of two models. A latent Syndemic Factor was used as the measurement model in both models. A measurement model was chosen as the analysis strategy because it allowed statistical modeling of the shared covariance between observed variables to test our proposition that the observed level of measured variables (depression, substance use, etc.) were the result of the level of an underlying, unobserved phenomenon (the Syndemic factor) plus

measurement error. The path analysis part of the SEM model allowed us to test hypothesized relationships between hypothesized predictors (Acculturation, Hispanic Stress, and Family Support) and the unobserved Syndemic Factor. The path analysis tested relationships in a similar way to linear regression, for example, a positive coefficient indicated that as the level of the predictor variable increased, the level of the Syndemic Factor also increased. In Model 1, the first three hypotheses were tested simultaneously, with the Acculturation dummy variables, Hispanic Stress, and Family Support entered as exogenous variables, along with two control variables (percent years in the United States and education). Dummy-coded variables were used so that we could make comparisons between categorical variables. In Model 2, to test Hypothesis 4, one additional exogenous variable representing the interaction was added to Model 1. This exogenous variable was the product of Family Support and Hispanic Stress. To reduce possible collinearity between main effects and interaction variables, these variables were mean-centered (Garson 2011). In all analyses, model fit was evaluated with three fit indices: the relative χ2 test, comparative fit index (CFI), and root mean square error of approximation (RMSEA). The relative χ2 test (e.g., Kline 2009) adjusts for the effects of sample size on the χ2 test and equals the χ2 value divided by degrees of freedom, with values less than 3 indicating good fit. CFI (Bentler 1990) ranges from 0 and 1, with values ≥.90 indicating a good fit (Hu and Bentler 1999). RMSEA (Hu and Bentler 1999) values ≤.06 indicate good fit. Effect sizes for SEM coefficients were based on the suggestions of Kline (2009), with cutoffs of .10 as small, .30 as medium, and .50 as large.

RESULTS

The sample consisted of a diverse group of adult Hispanic women representing numerous countries in the Americas, with Columbia (34 percent), Cuba (13 percent), Peru (8 percent), and the United States (6 percent) being the most frequently reported countries of origin. Unlike other areas of the country where Mexican American and Puerto Ricans are the largest Hispanic subgroups, Hispanics in South Florida are more likely to be of Cuban origin or from South American countries such as Colombia, Nicaragua, and Peru (U.S. Census Bureau, 2011). Most of the women were white (53 percent), 42 percent did not report race (other than Hispanic), 4 percent were African American, and 1 percent were Asian or Native American. More detailed demographic characteristics of the sample are described in Table 1 and elsewhere (Peragallo et al. 2012).

Acculturation

The majority of women in this sample were in the Separated category (i.e., high Hispanic Acculturation and low U.S. Acculturation) ($n = 350$, 64 percent), with about a third in the Integrated/Bicultural group (i.e., high Hispanic and U.S. Acculturation) ($n = 175$, 32 percent), and a much smaller number in the Assimilated group (i.e., low Hispanic Acculturation and high U.S. Acculturation) ($n = 23$, 4 percent). No women had low scores on both dimensions, so none were coded as marginalized. Results of ANOVA showed significant differences in Hispanicism, $F(2,546) = 304.15$, $p < .001$, Americanism, $F(2,546) = 638.12$, $p < .001$, percent years in the United States, $F(2,546) = 127.67$, $p < .001$, and log Hispanic Stress, $F(2,546) = 9.56$, $p < .001$. With regard to Hispanicism, Bonferroni post-hoc analyses indicated significant differences between all three groups; Hispanicism was highest for Separated women ($M = 3.72$, $SD = 0.28$), followed by Integrated/Bicultural women ($M = 3.37$, $SD = 0.35$), and Assimilated women ($M = 2.23$, $SD = 0.33$). Post-hoc analyses also showed significant differences

between all three groups in Americanism; Americanism was highest for Assimilated women (M = 3.79, SD = 0.29), followed by Integrated/Bicultural women (M = 3.15, SD = 0.46), and Separated women (M = 1.87, SD = 0.43). As with Americanism, post-hoc analyses also showed significant differences in percent years lived in the United States between all three groups, longest for Assimilated women (M = 0.87, SD = 0.17), followed by Integrated/Bicultural women (M = 0.41, SD = 0.31), and Separated women (M = 0.21, SD = 0.17). Post-hoc analyses indicated that Hispanic Stress was only significantly different between Separated women (M = 16.05, SD = 9.81) and Integrated/Bicultural women (M = 12.20, SD = 8.78), although Assimilated women were lower than both (M = 11.48, SD = 7.27). Although a log transformation was used in ANOVA to avoid violating assumptions of normality, the actual Hispanic Stress values are reported.

Hypotheses 1–3

Model fit was not satisfactory, χ^2 (49) = 114.61, p < .001, relative χ^2 = 2.34, CFI = .88, RMSEA = .05, in the initial SEM model. One correlation between indicator errors in the measurement model (partner risk with partner violence) was added to the model after being suggested by a modification index. The modified model showed good fit, χ^2 (48) = 94.46, p < .001, relative χ^2 = 1.97, CFI = .91, RMSEA = .04. Combined, all the exogenous variables accounted for a large amount (61 percent) of the variance in the Syndemic Factor. Standardized paths and loadings for this model are summarized in Figure 1. Both control variables were related to the Syndemic Factor: percent years in the United States, β = .23, B = 1.36, SE = 0.32, p < .001, and education, β = −.12, B = −0.45, SE = 0.15, p = .002. Consistent with Hypothesis 1, there was a large-sized relationship between the latent Syndemic Factor and Hispanic Stress, β = .70, B = 1.48, SE = 0.15, p < .001. Consistent with Hypothesis 2, there was a small-sized relationship between the Syndemic Factor and Family Support, β = −.15, B = −0.33, SE = 0.09, p < .001. With respect to Hypothesis 3, acculturation partially influenced the Syndemic Factor. Specifically, Assimilated women were not significantly different from Integrated/Bicultural women, β = .01, B = 0.04, SE = 37, p = .91, but Separated women were, β = −.20, B = −0.68, SE = 0.17, p < .001. That is, Separated women scored lower on the Syndemic Factor compared to Integrated/Bicultural women.

Hypothesis 4

This model showed good fit, χ2 (55) = 101.20, p < .001, relative χ2 = 1.84, CFI = .90, RMSEA = .04. The addition of the interaction term to the model explains a significantly greater amount of variance in the Syndemic Factor, but the interaction itself was statistically significant. In this model, Hispanic Stress was positively related to the Syndemic Factor, β = .70, B = 1.46, SE = 0.14, p < .001, but Family Support was no longer significant, β = .25, B = 0.54, SE = 0.40, p = .175. Consistent with Hypothesis 4, the product (Hispanic Stress and Family Support) was significantly related to the Syndemic Factor, β = −.40, B = −0.33, SE = 0.14, p = .021. Figure 2 illustrates the interaction with the Syndemic Factor, with estimated values at 1 SD above (high) and below (low) the mean of both Family Support and Hispanic Stress.
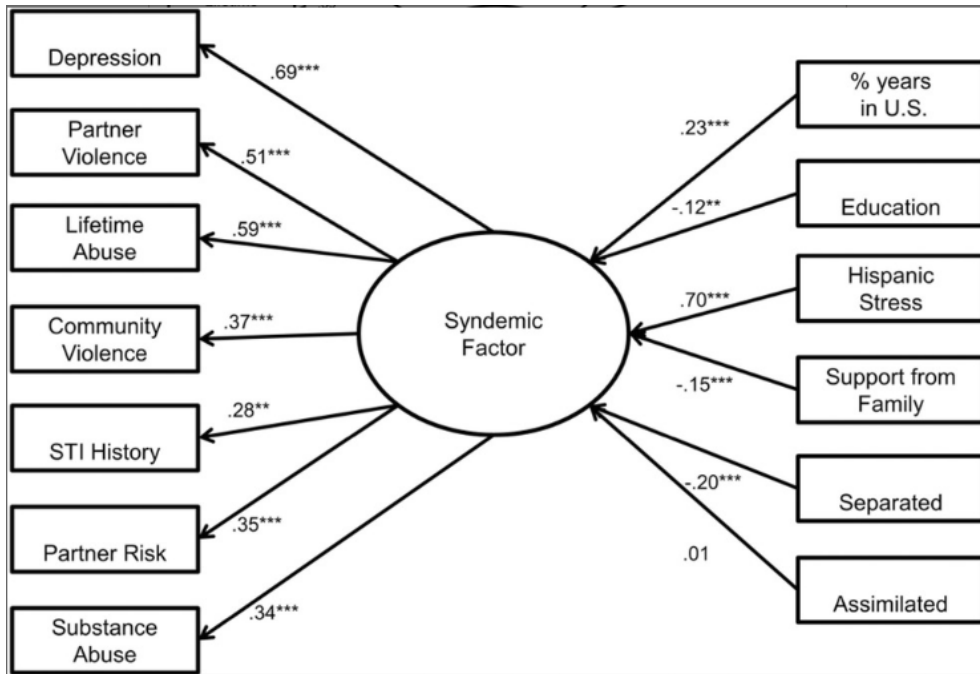
Figure 1. SEM of cultural variables predicting a latent Syndemic Factor.
Note. Standardized coefficients are shown. Error not shown. $\chi2$ (48) = 94.46, p < .001, relative $\chi2$ = 1.97, CFI = .91, RMSEA = .04. **p < .01, ***p < .001
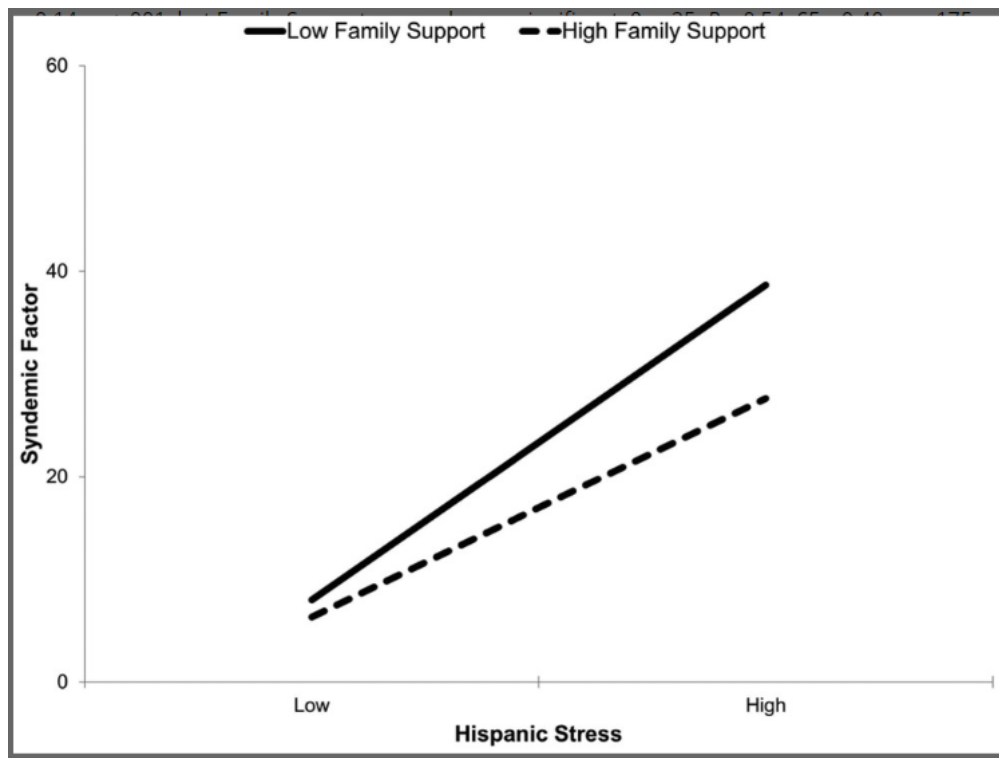

Figure 2. Estimated values of the Syndemic Factor for high and low Family Support and high and low Hispanic Stress.
Note. High = Mean + 1 SD; Low = Mean − 1 SD.

DISCUSSION

This study is the first, to our knowledge, to explore the relationship between intertwined behavioral and mental health conditions accounting for health disparities among Hispanic women (i.e., substance abuse, violence, HIV, and depression as a Syndemic Factor) and cultural phenomena that may place this population at risk for or protect them from this Syndemic Factor from a quantitative perspective. SEM results suggested that education, time in the United States, Acculturation, Hispanic Stress, and Family Support are related to, and account for a large amount of variance in, this Syndemic. This result supports the idea that for Hispanic women, cultural phenomena are an important influence on the interrelated conditions of substance abuse, violence, HIV risk, and depression. Further, the interaction between Hispanic Stress and Family Support adds information about an important mitigating relationship. Although it appears that Hispanic women with higher levels of stress are at an increased risk for the syndemic conditions under consideration in this study, strong Family Support can help buffer the effects of these stressors.

It is important to note that the effects of the proportion of the women's lifetime spent in the United States were controlled in these analyses, thus adding additional support to the importance of the acculturation process. Integrated/Bicultural individuals (high Hispanicism and Americanism) were used as the comparison group because integration and biculturalism has been associated with the best health outcomes (Berry 1997; Rojas-Guyler et al. 2005), but our results contrasted with these previous findings. Specifically, Separated women (low Americanism and high Hispanicism) had lower scores on the Syndemic Factor compared to Integrated/Bicultural women (high Americanism and High Hispanicism), and no differences were noted between Assimilated women (high Americanism and low Hispanicism) and Integrated/Bicultural women. One possibility is that because Separated women were more highly Hispanic than the Integrated/Bicultural women, these women ascribed to more traditional values associated with less sexual risk behaviors and substance abuse (Rojas-Guyler et al. 2005). It may be that women who ascribe to more traditional "Hispanic" values are more likely to be married, less likely to participate in risky behaviors, and be unaware of their partner's risk behaviors as has been documented in previous studies (Loue et al. 2003; Rojas-Guyler et al. 2005). Another possibility, consistent with the Separated women's much lower Americanism scores, is that U.S. culture is associated with greater health risks. This is consistent with qualitative findings describing the perception that substance abuse and sexual risk taking among Hispanic women is higher among women who are more assimilated to U.S. culture (Gonzalez-Guarda et al. 2011c). Lastly, Assimilated women did not score higher on the Syndemic Factor than Integrated/Bicultural women. This may be because Integrated or Bicultural women in this sample were struggling to negotiate between two cultures, a stressor that may have placed them at a comparable risk for the Syndemic Factor as the acculturated women. Future research with this population needs to be conducted to identify what aspects of the acculturating process are associated with health disparities among Hispanics. This research should take into account other potential phenomena that may be related to the acculturation process and confound these relationships (e.g., immigration status).

Hispanic Stress had a strong negative impact on the Hispanic women in this research study. In fact, Hispanic Stress had the largest relationship to the Syndemic Factor. This finding is consistent with previous research in which Hispanic Stress was associated with risk behaviors such as unprotected intercourse and increases in partner's sexual risk (Ickovics et al. 2002). It is possible that the psychological stress experienced by Hispanics that is related to immigration or discrimination processes and their lack of access to skills and resources to cope with these stressors

may lead to maladaptive behaviors such as substance abuse, relationship conflict, risky sexual behaviors, and depression. These stressors appear to surface across several domains, including those related to economics, family, culture, marriage, and immigration, all subscales of the Hispanic Stress Inventory (Cervantes et al. 1991). However, because a total score was used to calculate Hispanic Stress, these results do not differentiate whether a subset of these stressors were responsible for an increase in risk for the Syndemic Factor. Future research needs to be conducted to identify which stressors are the most important predictors of the Syndemic Factor. This information could be useful in developing structural interventions aiming to prevent this syndemic among Hispanic women.

Family Support also appeared to have an important association with the Syndemic Factor. This result is consistent with past research showing that greater Family Support is associated with fewer sexual risk behaviors (Landau et al. 2000). More interestingly, the significant interaction with Hispanic Stress suggested that Family Support was particularly beneficial in the context of high Hispanic Stress. This effect is consistent with a social support buffering model from a stress-process perspective (e.g., Cohen 2004), with emphasis on the support women received from their families. This support is especially important for individuals or families experiencing higher levels of psychological stress associated with acculturation and discrimination.

Various study limitations need to be mentioned. First, the participants of this study included a convenience sample of Hispanic women from South Florida, an area in the United States where Hispanics represent the majority of the population (e.g., 65 percent in Miami-Dade County; U.S. Census Bureau 2011). Consequently, women from this study may have had more opportunities to maintain their Hispanic culture and navigate within their own language when compared to other Hispanic women living in areas with non-Hispanic majorities. Second, the Familism scale did not perform as intended. As a result, only one component of this phenomena, Family Support, could be examined. Further, this environmental context may have an impact on the amount of stress they experienced living as Hispanics in the United States. Results from this study do not rule out the possibility that alternative models may fit the data as well or better, and the cross-sectional nature of the data precludes strong causal inferences. Despite these limitations, this study provides an important contribution to the research literature by identifying important cultural phenomena that may link the substance abuse, violence, risk for HIV infection, and depression syndemic among Hispanics.

The findings from this study have important implications for the development of intervention strategies that aim to prevent or reduce the burden of syndemics among Hispanics. Hispanic Stress was found to be the most powerful predictor of the Syndemic Factor in this study. The measure used to capture stress encompassed a variety of phenomena (e.g., economics, immigration, discrimination) that could only be modified through structural interventions aimed at changing policies, opportunities, and norms that provide more support for this population. For example, in one of the qualitative studies informing the quantitative analysis presented in this article, Hispanic men identified structural unemployment (i.e., the unavailability of stable jobs, especially for undocumented individuals) as being a major stressor and "cause" of substance abuse and associated risk behaviors (Gonzalez-Guarda et al. 2010). In a similar study conducted with Hispanic women, participants described that although employment opportunities were scarce, that it was easier for women than men to find "under the table" service jobs as nannies or housekeepers. This created conflict in intimate relationships because women had to assume some of the traditional roles of men in regard to being the financial head of the household. This conflict was perceived as often resulting in violence (Gonzalez-Gaurda et al. 2011c). Policies limiting

employment opportunities for Hispanics and other vulnerable populations that may face similar stressors must be critically analyzed and transformed to create more supportive environments where syndemics do not thrive.

In order to optimize the potential for prevention, structural interventions should be coupled with strategies targeting communities and families. Interventions must be developed to promote healthier norms around racial, ethnic and cultural diversity, gender-role expectations, and the maintenance of cultural and family ties. For example, this study found that women who are more "Hispanic" had lower scores on the Syndemic Factor. Community-level intervention strategies that promote Hispanicism (e.g., sponsoring cultural events) or support Hispanics (e.g., creating coalitions of culturally appropriate Hispanic service organizations) should be developed and formally evaluated for their potential to prevent or reduce syndemics. Family-level intervention that aims to preserve the strong ties that many Hispanics come with must also be developed. These interventions should address common stressors that Hispanics families may face in the United States (e.g., children and parents acculturating at different rates; less family support) and provide families with the skills (e.g., healthy communication) and strategies (e.g., work–family balance) to effectively cope with these stressful situations.

Lastly, the Transactional Model by Lazarus and Folkman (1984) suggests that in order to minimize the negative effects of stress and promote positive coping, one may alter an individual's appraisals of the threat of the stressor and her confidence of being able to cope effectively. This model supports the development of stress management interventions that provide Hispanics with the skills and resources to effectively cope with common stressors they may face, such as linguistic differences, changing personal and family values, changing gender role expectations, and ability to meet daily needs and immigrant status (Cervantes et al. 1991). Nevertheless, if these individually focused strategies are not combined with the structural, community and family level interventions previously discussed, it is likely that any improvements that are seen in regard to coping will not be sustained.

CONCLUSION

Substance abuse, violence, risk for HIV, and depression represent a Syndemic experienced by Hispanics. This Syndemic may represent an underlying phenomena shaped by health and social disparities. Acculturation, Hispanic Stress, and Family Support are cultural phenomena that explain a large amount of the variance in this Syndemic. While Hispanic Stress appears to be a risk factor for this Syndemic, high Hispanic Acculturation and Family Support protects Hispanic women from the Syndemic, especially those exposed to high levels of Hispanic Stress. Structural, community, family, and individually focused interventions that address common stressors Hispanic encounter, promote Hispanicism, provide access to community resources, and provide families and individuals with tools to effectively cope with a difficult environment are needed to prevent and reduce syndemics among this population.

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