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Keywords
stress, drug use, immigrant generation

Immigrant Generation, Stress Exposure, and Substance Abuse among a South Florida Sample of Hispanic Young Adults

Stacy Salerno¹, John Taylor¹,², and Quentin K. Kilpatrick¹,²

Abstract
Existing research finds that succeeding immigrant generations are at greater risk for mental health problems as well as higher levels of substance use. Previous studies have attempted to unpack the role of acculturation stress, discrimination, and other factors in these outcomes. Using data from a community-based sample of Miami-Dade County young adults, we use an empirically and theoretically precise measurement of generational status, allowing us to better understand the process of acculturation and adaptation experienced by each generation. Our results are consistent with theories on the relationship between exposure to social stress and substance use. We find that first-generation immigrants have less exposure to social stress and as a consequence are at a decreased risk for involvement in substance use compared to second- and third-generation immigrants, who report being exposed to higher levels of social stress and higher levels of substance use.

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Hispanic health gradients across immigrant generations have been well documented. Prevailing research has revealed that each succeeding generation is at greater risk for mental health (Ali 2002; Rumbaut 1994) and substance use problems (Alva 1995; Khoury et al. 1997). For example, native-born children of immigrants experience more depression and family conflict (Mena, Padilla, and Maldonado 1987) and perceived discrimination (Edwards and Romero 2008; Rosenbloom and Way 2004) and are at higher risk for drug use than their parents (Greenman and Xie 2008; James 1997). Although prior studies have explored the influences of acculturation stress, discrimination, and other factors that potentially lead to this well-established pattern of findings, the underlying mechanisms are still not well understood.

There is evidence in support of the “healthy immigrant effect,” which posits that first-generation immigrants arrive in better health than their U.S.-born counterparts (McDonald and Kennedy 2004). Also, the acculturation process associated with greater time spent living in the United States has been shown to increase exposure to social stress and therefore erode the health advantages of foreign-born arrivals as they adopt the health behaviors of receiving countries. A third strand of research has documented trends in downward assimilation among second-generation immigrants. This occurs when discrimination and exposure to adversity associated with ethnic minority status results in assimilation into disadvantaged social positions (Acevedo-Garcia et al. 2010; Waters 1999).

Prior research also underscores two research priorities that may better inform the relationship between immigrant and health behaviors. First, efforts are needed to be more empirically and theoretically precise in the measurement of immigrant generation. To best achieve this, we follow Rumbaut’s (2004) typology of distinct generational cohorts based on nativity and age at arrival for first-generation immigrants and parental nativity for second-generation immigrants. Doing so provides a more nuanced assessment of the sociodevelopmental contexts of each generation during the process of adaptation and acculturation. Furthermore, second-generation immigrants in particular differ substantially by parental nativity, with studies finding that second-generation children with at least one native-born parent have higher

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chances of achieving a college education and economic success (Ramakrishnan 2004). First-generation immigrants also differ in their experiences based on age upon arrival. Studies find that immigrants who arrive as young children and thus have spent more time in the United States have better access to health care (Kandel and Kao 2006).

Second, stress research emerged as a prominent theoretical framework because it has provided valuable information in explaining the links between social status and health. Pearlin (1989) has argued that stress exposure, as well as other risk and protective factors, arise from the context of people’s day-to-day lives. Moreover, prior stress research has documented the need to more comprehensively assess group differences in exposure to adversity. With respect to the study of immigrant populations, we believe this requires consideration of exposure to stressful circumstances that are not limited to acculturation and discrimination stress. To address this limitation in prior research, we employ a more comprehensive evaluation of stress exposure than has been employed in previous studies on immigrant generation and substance use.

In the present study, we analyze data from a community-based sample of Miami-Dade County young adults to address three objectives. First, we examine how substance use varies by generation. We do so in anticipation of finding that generational status will be positively associated with substance use. Second, we assess the mediating role that exposure to social stress plays in the relationship between generational status and substance abuse. We hypothesize that stress exposure will statistically explain away the positive relationship between immigrant generational and drug use. This is based on evidence from prior studies that exposure to social adversities tends to increase with each successive immigrant generation and increased time spent in the United States. Finally, we examine the possibility that higher immigrant generations will amplify the relationship between stress and drug use. In other words, we hypothesize that the magnitude of the positive relationship between immigrant generation and drug use will be greater among those in higher immigrant generation categories.

**Background**

**The Hispanic Paradox**

The Hispanic Paradox is based on evidence that compared to U.S.-born populations, newly arrived immigrants enjoy better health outcomes despite a disadvantaged socioeconomic status (SES; Franzini, Ribble, and Keddie 2001; Markides and Eschbach 2005; Palloni and Morenoff 2001). Studies have consistently found that first-generation immigrants, including adolescents, actually experience the same or better mental health than the native-born (Rumbaut 1994). Moreover, this health advantage extends to comparisons between foreign-born Hispanics and native whites (Teruya and Bazargan-Hejazi 2013). One potential explanation for the Hispanic Paradox is that the process of acculturation increases with each generation and has been detrimental to the mental health of the native-born (Rumbaut 1997).

Twentieth-century literature on immigration has portrayed the immigration process as a stressful one and newly arrived immigrants as having a higher risk for mental health problems when compared to the native-born (Thomas, Znaniecki, and Zaretsky 1984). Indeed, a review of studies of Hispanic health since the 1950s suggests that the Hispanic health paradox is a relatively new phenomenon (Franzini et al. 2001). Adjusting to a new language and culture can be stressful and cause deleterious mental and physical health consequences for Hispanic immigrants (Cervante et al. 2013; Finch et al. 2002). Yet studies over the past quarter of a century continue to report evidence in support of the Hispanic Paradox in their findings, suggesting that exposure to stress and adversity may increase with each generation (Teruya and Bazargan-Hejazi 2013). To be clear, the Hispanic Paradox does not appear to extend to all Hispanic ethnic groups, nor is it limited to immigrant populations. For example, immigrants from the Dominican Republic tend to report poorer health outcomes compared to other Hispanic immigrant groups. But it is also clear that advantaged health of newly arrived Hispanic immigrants accounts for some important part of what we know to be the Hispanic Paradox.

**Acculturation**

Acculturation refers to the cultural changes experienced by immigrants after exposure to culturally distinct people and traditions (Berry 1980). Acculturation is often used as a proxy for loss of culture, traditional social networks, language, diet, and health behaviors (Marshall et al. 2005), and immigrant generation may be a more accurate depiction of acculturation as exposure to adversity. For first-generation immigrants, maintaining parental expectations originating in the sending country may protect them from the negative influences of peers and ecological settings linked to acculturation (Baptiste 1993; Iggo 1995; James 1997; Rumbaut 1994; Velez and Ungemack 1995). The second-generation adolescent is more familiar with American customs, social networks, and language than the parents are (Baptiste 1993; Waters 1995).

With a weakened family bond, external influences (e.g., peers and neighborhoods) become increasingly important (Brindis et al. 1995; Epstein et al. 1995; Hovey and King 1997; James 1997; Velez and Ungemack 1995). As later generations move outside of ethnic enclaves, they may lose some of the protective aspects of enclaves like buffering discrimination (Portes and Rumbaut 2001, 2006, 2014). For second- and third-generation immigrants, acculturation may facilitate a break from protective family environments and the adoption of behaviors that are more typical of an American lifestyle that is characterized by higher levels of seeking independence and involvement of risky behaviors (Eitle, Wahl, and Aranda 2009).
**Substance Abuse and Exposure to Social Stress**

Existing literature suggests a positive relationship between exposure to perceived discrimination, social stress, and substance abuse (Kulis, Marsiglia, and Nieri 2009). Acculturating to American teen culture can be stressful for immigrant adolescents even if they are born in the United States. Second- and third-generation adolescents often provide their first-generation relatives social support by becoming their spokesperson or broker (Cervantes et al. 2013) while also attempting to embrace American culture. Providing social support for relatives while managing their own affairs can be a source of stress to second- and third-generation immigrants.

Hispanic boys in Miami who reported using the English language more often experienced relationship strain with parents, which in turn was positively associated with increased alcohol use (Gil, Wagner, and Vega 2000). By analyzing data from the Drug Use Trajectories: Ethnic Racial Comparisons 1998–2002, we will have a better understanding of the increased likelihood of substance abuse among second and third generations, and by using generation as a proxy for acculturation, we will address the gap in the literature by examining the mechanisms that influence how increased length of time in the United States leads to poor health behaviors and mental health outcomes. We will employ a wider range of multidimensional measures of stress, such as recent life events, chronic stressors, lifetime major events, and discrimination stress, to examine the extent to which these dimensions demonstrate immigrant generation variations in stress exposure and its effects on drug use.

**Data and Methods**

This paper is based on a study of the prevalence and social distributions of psychiatric and substance use disorders and factors that increase and decrease risk for such disorders among a representative cohort of 1,803 young adults. Most (93 percent) were between 19 and 21 years of age when interviewed between 1997 and 2000. The study possesses unique potential for contribution in at least two respects. First, this is one of the first large-scale community studies to estimate the occurrence of disorders based on criteria from the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders*. Second, our study population is ethnically diverse, allowing consideration of ethnic variations in risk and factors that influence risk. Specifically, the sample was drawn such that approximately 25 percent are of Cuban origin, 25 percent “other Hispanic,” 25 percent African American, and 25 percent non-Hispanic white. However, the present paper considers only those participants of Hispanic heritage (n = 888).

**Sample**

Our approach in drawing this sample was in accord with the view that there are important cultural variations within broad ethnic statuses. In an effort to minimize the effects of such variations on results, we have distinguished Cuban Americans from other Hispanics and within this latter category, focused on Hispanics from families originating in countries in the Caribbean basin. This distinction was based on the fact that within South Florida, Cubans tend to be advantaged relative to other ethnic minorities in terms of the size of the community and with respect to SES and political influence. The non-Cuban ethnic category is diverse and reflective of the demographic composition of South Florida. The most prominent group within the other Hispanic category is Nicaraguan at 34 percent, with Mexicans, Dominicans, Hondurans, and Colombians each representing between 6 percent and 9 percent. Many of these ethnic groups were new arrivals to south Florida, which explains why almost 84 percent occupy the 1.25- to 1.5-generation category reported in the following. With the exception of four participants who described themselves as Panamanian, Salvadoran, or Venezuelan, the remaining 27 percent of those included in this category designated themselves as Hispanic American or Latina/o. By design, we did not collect information on the legal status of these study participants.

This study builds on a previous three-wave investigation based in the Miami-Dade public school system (Vega and Gil 1998). All 48 of the county’s public middle schools, all 25 public high schools, as well as alternative schools had participated. Questionnaires were administered annually between 1990 and 1993 beginning in grades six and seven and ending when participating students were in grades eight and nine. This prior study had originally been funded as an all-male investigation. However, discomfort with this in the context of developing inclusiveness policies led those investigators to add a small sample of girls. Their detailed analyses provided assurance that wave 1 participants were highly representative of the population from which they were drawn and that this was also true for the wave 3 participants despite a nearly 20 percent attrition across the three data points (Vega and Gil 1998).

Within the confines of ethnicity criteria, all female participants in the earlier investigation (n = 410) and a random sample of 1,273 male participants were ultimately selected for follow-up. Because a relatively small number of females were included in the parent study, a supplementary sample was randomly drawn from the Miami-Dade County 1990 sixth- and seventh-grade class roster. Overall, 70.1 percent of those sampled were successfully recruited to the study. By far the greatest loss occurred among the new sample of females who had no involvement in the earlier study. A success rate of 76.4 percent was achieved among those in the original sample despite the fact that many had left home for college or other reasons. Details on our sampling frame and losses to interview are summarized in Figure 1.

Those interviewed were compared with the total sample drawn from the original study population on a wide array of early adolescent behaviors and family characteristics (analyses not shown), including family structure, parental education
and income, parental substance use, and reports by respondents of substance use within the wave 1 and wave 3 questionnaires. No statistically significant differences were observed. Comparisons were also made with respect to school dropout. Among those interviewed, 20.5 percent reported that they had dropped out of high school. This corresponds closely with rates reported by the school board on the same student cohort of 21.1 percent for males and 15.2 percent for females. These comparisons and the 76.4 percent follow-up success suggest that our sample is reasonably representative of the population from which it was drawn. In contrast, comparisons on an array of characteristics revealed a significant gender difference with respect to parental SES associated with the 41.8 percent loss rate among the supplementary sample of new girls. However, because the multivariate analyses to be presented exclude males and non-Hispanic females, the statistical adjustment we would otherwise make to correct this artifactual gender difference in SES distribution has not been employed.

All interviewers held bachelor’s degrees, and most had some graduate education. They were given a total of seven days of training, two days on general interviewing techniques and procedures and five days on the Michigan Composite International Diagnostic Interview. Except for the initial cohort of field staff, this training was followed by the observation of two interviews conducted by experienced interviewers. The use of portable computer-assisted personal interviews assured appropriate skip patterns and greatly facilitated reliable administration. Our standard practice was face-to-face interviewing in the respondent’s home or our research offices as the respondent chose. However, telephone interviews utilizing previously mailed support materials were employed for those who were away at university or had moved elsewhere in the contiguous United States. Approximately 30 percent of the interviews were conducted by telephone. Although most evidence suggests that in-person and telephone interviews yield comparable data, contrary findings have also been reported (Aquilino 1994). The effect of interviewing mode was assessed in the present case using logistic regression. The presence versus absence of a drug-dependence diagnosis was regressed on interviewing mode with and without controls on gender and ethnicity. No evidence was found of any interviewing mode effect either within or across immigration categories.

All interviews were conducted in English. They were not offered in Spanish because the young adult study participants

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**Figure 1.** Sampling framework and data collection.
were part of a cohort assembled when they were in sixth or seventh grade in the local public school system. Thus, all were fluent in English, having resided in Miami for 10 or more years by the time of the present study. In an effort to increase confidence with respect to cross-cultural comparability of the meaning of questionnaire items, we conducted four days of focus group work with minority adolescents of diverse national origins. This work yielded some slight modifications in question wording, but only for a small minority of items.

Measures

Outcome Variables

Substance Use. Substance use was assessed by three patterns of behavior: past month alcohol use, daily tobacco use, and past month marijuana use. Each of these measures were individually standardized, combined, and restandardized so that each measure had equal weight.

Past Month Alcohol Use. This variable was constructed from a series of questions asking respondents about past and current alcohol use. In computer-assisted interviews, respondents were asked to identify how frequently they had engaged in drinking a number of drinks in the past year. Categories for the numbers of drinks consumed were 1 to 2, 3 to 4, 5 to 9, 10 to 19, and 20+. Categories for the frequency of consuming drinks were less than monthly, 1 to 3 times a month, 1 to 2 times a week, 3 to 4 times a week, and nearly every day. Responses that indicated less than monthly drinking in the past year were coded as 0. Responses for the lowest reported alcohol consumption other than zero (1–2 drinks, 1–3 times a month) were coded as 2 and multiplied across higher levels of drinking. The Appendix presents information detailing this coding structure.

Two issues should be noted with respect to this measure. First, although our assessment of alcohol use is more detailed compared to most previous research that has focused on dichotomous or frequency measures of binge drinking, our measure did little to capture moderate or infrequent episodes of drinking. This was confirmed by preliminary analyses (not presented) that showed alcohol use and abuse were synonymous within this study population (as it is with most other studies with samples in this age range). Thus, it is unclear to us if this measure is an advance over previous research efforts. Second, this lack of variance in drinking behaviors led to our decision to combine drinking with tobacco and marijuana use.

Daily Tobacco Use. This measure was assessed from a series of variables asking respondents about past and current tobacco use. Respondents who did not report currently smoking were coded 0. Respondents who reported that they were current smokers were asked to identify the number of cigarettes they smoked daily within provided ranges. Responses

Table 1. Typology of Immigrant Status.

| Generational Status | Individual Characteristics |
|---------------------|----------------------------|
| First generation    | Nativity Age at Arrival Parental Nativity |
| 1.25                | FB 13–17 NA |
| 1.5                 | FB 6–12 NA  |
| 1.75                | FB 0–6 NA  |
| Second generation   | USB NA Both FB |
| 2.0                 | USB NA Both FB |
| 2.5                 | USB NA Both FB |
| Third generation    | USB NA Both USB |

Note: FB = foreign-born; USB = U.S.-born; NA = not applicable.

of less than or equal to 10 were coded as 5.5, the mean value of the range provided. Responses of 11 to 20 were coded as 15.5. Responses of 21 to 30 were coded as 25.5. Responses of 31 or more were given the value of 35.5.

Past-month Marijuana Use. This measure was created from a series of questions assessing past and current marijuana use. Respondents that did not report smoking marijuana in the past month were coded as 0. Values were then assigned to approximate the frequency of consumption in the past month. Responses of 1 to 2 times in the past month were coded as 1.5. Responses of several times a month were coded as 7. Responses of 2 to 3 times a week were coded as 10. Responses of daily were coded as 28.

Immigrant Generation. Immigrant generation was identified from questions about respondent and parental nativity, age, and migration histories. Based on Rumbaut’s (2004) conceptualization of distinct immigrant generations by life stages, we identified six generations: a 1.25 generation (foreign-born, arrived between ages 13 and 17), a 1.5 generation (foreign-born, arrived between ages 6 and 12), a 1.75 generation (foreign-born, arrived before age 6), a second generation (native-born with foreign-born parents), a 2.5 generation (native-born with one foreign-born parent), and a third or higher generation (native-born with both parents foreign-born). Due to low cell sizes, in the analyses that follow, generational groups were merged into three generational categories: a 1.25/1.5 generation, a 1.75/2 generation, and a 2.5+ generation. This typology is presented in Table 1.

Stress Exposure/Social Stress. The measure of stress involved the consideration of five dimensions of potentially stressful experiences. These dimensions included recent life events, chronic stress, life traumas, day-to-day discrimination, and major discrimination events. In Table 2, these measures are assessed individually. To our knowledge, the analyses that follow are the first to include these five measures of stress in research that has focused on the relationship between immigrant incorporation and substance use. In Table 3, these
separate stress domains were standardized based on Hispanic subsample, combined, and restandardized so that each domain carried equal weight. This combined measure ranged from −2.00 to 3.72 with a mean of 0 and a standard deviation of 1.

It should be noted that preliminary analyses (not shown) also included a measure of acculturation stress. However, this measure, based on language preference, was unrelated to the outcomes of interest and therefore was excluded from the analyses presented in the following.

Recent Life Events. Recent life events were assessed by using a count of a 32-item checklist of negative events common to many life event indices (Avison and Turner 1988; Turner and Avison 1992; Turner, Wheaton, and Lloyd 1995). Participants were asked about experiences that happened to them or someone close to them in the past 12 months (e.g., “Did you ever lose your home because of a natural disaster?”; “Have you ever been physically assaulted or mugged?”; and “Did you witness your mother or another close female relative being regularly physically or emotionally abused?”). Scores ranged from 0 to 20 with a mean of 5.49 and a standard deviation of 3.83. The Cronbach’s alpha for this measure was .77.

Major Discrimination. Major discriminatory events were assessed based on the measures developed by Williams and colleagues (1997). As observed by Kessler, Mickelson, and Williams (1999), the authors label the first set of items “major” because their occurrence at any time tends to interfere with social and economic achievement, with accompanying consequences for life chances and well-being. Scores on major discrimination are simple counts of the number of items reported as having ever occurred. The measure included items such as “Have you ever been unfairly fired or denied a promotion?” and “Have you ever been unfairly discouraged by a teacher or advisor from pursuing the job/career you want?” The final measure ranged from 0 to 6 with a mean of 1.09 and a standard deviation of 1.19. The Cronbach’s alpha for this measure was 0.44.

Day-to-day Discrimination. Daily experiences of discrimination were assessed based on the measures developed by Williams and colleagues (1997). The measure consisted of nine items that asked, “In your day-to-day life, how often have any of the following things happened to you?” Potential discriminatory experiences included items such as “People act as if they are better than you” and “You are threatened or harassed.” Responses ranged from 0 = never to 4 = almost always. The final measure ranged from 0 to 31 with a mean of 7.65. The Cronbach’s alpha for this measure was 0.84.

Demographic Variables. We employed three dichotomous control variables: gender (female), student status (currently in school), and Cuban origin (identified as Cuban or Cuban American). Additionally, we controlled for SES. Because this sample was composed of young adults, SES was assessed by parental educational attainment, income, and occupational prestige. Each variable was standardized and combined into a composite measure of SES.

Results

Descriptive information for all study variables is presented in Table 2. These findings are consistent with expectations and confirm that SES and drug use are positively related with immigrant generation. Also, with the exception of chronic strains and to a lesser extent, major life events, all of

Table 2. Distribution of Study Variables by Generational Status.

|                      | 1.25–1.5 | 1.75–2.0 | 2.5+  |
|----------------------|----------|----------|-------|
| % Female             | .54.01   | .50.91   | .43.36 |
| % Cuban              | .16.04***| .50.91   | .30.09***|
| % Student            | .51.34*  | .60.81   | .55.75 |
| Socioeconomic status | −.38*    | −.21     | .15*** |
| Major life events    | 2.20     | 1.99     | 2.50***|
| Chronic stressors    | 12.18    | 11.82    | 9.78** |
| Lifetime traumas     | 4.61***  | 5.57     | 6.61***|
| Day-to-day discrimination | 13.63   | 14.65    | 15.73 |
| Major discrimination | .99      | 1.11     | 1.14  |
| Drug use             | −.15     | −.02     | .35*** |
| N                    | 187      | 495      | 113   |

Note: Mean values presented unless otherwise noted. Significance levels are compared with 1.75 to 2.0 generation. *p < .05. **p < .01. ***p < .001.
the measures of stress exposure increase with immigrant generation.

Table 3 employs ordinary least squares regressions to assess the extent to which stress exposure mediates the relationship between immigrant generation and substance use. Models 2 through 7 introduce each dimension of stress exposure one at a time, and the final model contains all of the stress measures entered together. These models show that the individual and combined effects of stress exposure do little to account for the relationship between immigrant generation and drug use. For the generation 1.25/1.5 coefficients, there is no relationship to explain away. In contrast, the generation 2.5+ coefficients are strongly and significantly related to drug use in all of the models displayed here. The generation 2.5 coefficient presented in Model 2 was reduced from 0.356 to 0.298 in Model 8. Therefore, no hypothesized mediating effects were observed.

It is worth noting that three of the five measures of stress, major life events, lifetime traumas, and major discrimination, remain significant in the final model. At least two interpretations can be made from this pattern of findings. First, the magnitude of each of the variables is substantially reduced compared to the earlier models when each is entered separately. The mediating effects in Model 8 when all stress variables were simultaneously entered was almost 60 percent for major life events, 38 percent for lifetime traumas, and 55 percent for major discrimination. This indicates a relatively high level of empirical overlap among these variables. Second, the stress scores that remained significant each captured eventful or episodic experiences, while the two stress scores that were reduced to nonsignificance, chronic strains and day-to-day discrimination, measured ongoing adversities. Thus, it appears that acute stressful events are better predictors of substance use, at least in this sample.

It is also worth noting the stark gender contrasts in substance use. Regression coefficients indicated that male use was significantly higher compared to their female counterparts even when the effects of immigrant generation and stress exposure were controlled for. Previous research (González Wahl and Eitle 2010 in their study alcohol use and binge drinking) suggests that gender differences in drug use are complex and vary substantially across Hispanic ethnicity and gender.

Additional analyses (not shown) were conducted where each type of substance use was individually regressed on the variables of interest. Similar patterns of findings were observed for cigarette and marijuana use. Regression models for alcohol use indicated that drinking increased with each succeeding generation; however, the magnitude of relationship between the 2.5+ generation and drinking was weaker in comparison to linkages between cigarette and marijuana use.

The analyses presented in Table 4 examine the extent to which stress exposure moderates the relationship between generation and substance use. To test this possibility, all of the stress scores were combined into a single measure and stress by generational status interaction terms were computed. The stress by generation 1.25/1.5 interaction term (Model 4) was negative and not statistically significant. In contrast to Model 4 and consistent with expectation, the stress by generation 2.5 variable presented in Model 5 was positive and significant ($p < .01$), indicating that the magnitude of the relationship between immigrant generation and substance use was greater among study participants who were exposed to higher levels of social stress. The positive coefficient confirms that the relationship between stress exposure and drug use is significantly more robust among the 2.5 generation compared to lower generational categories.
As before, we conducted a separate set of analyses where each substance behavior was substituted for the combined variable (again not shown). We observed a similar pattern of findings to those presented previously. Generation 2.5+ by stress interaction terms were significant and highly robust with respect to cigarette and marijuana use. However, the interaction term for drinking was not statistically significant. These analyses suggest that our statistical models are much better predictors of cigarette and marijuana use compared to alcohol use.

### Discussion

This study confirms the value of using more specific immigrant generation categories to examine the differences in mental health outcomes and substance abuse among immigrants. Our results demonstrate that socioeconomic status and drug use are positively related to immigrant generation and that longer time spent in the United States is associated with higher levels of social stress. Stress exposure moderates the relationship between generational status and drug abuse for the 2.5+ generations but not others. The magnitude of the relationship between immigrant generation and drug use was much stronger among participants who were exposed to higher levels of social stress.

These results also suggest that first-generation immigrants have less exposure to social stress and as a result may be at decreased risk for involvement in substance use. In contrast, second-generation immigrants with at least one native-born parent and third-generation immigrants are exposed to higher levels of social stress and report higher levels of substance use. For these later generations, embracing lifestyles associated with the receiving country may have a negative effect on their mental health due to a higher exposure to stress and the adoption of risky behaviors. Second- and third-generation immigrants are also more likely to move away from immigrant enclaves and into neighborhoods where they may experience higher levels of discrimination and prejudice. Social stress has a moderating effect on substance abuse for second- and third-generation respondents, where the relationship between generational status and substance abuse is much stronger. These results underscore the viability of including more comprehensive indices of stress exposure than have been traditionally employed in previous research efforts.

Study limitations are acknowledged. First, we employed a cross-sectional study design, rendering us unable to assess the temporal ordering between stress exposure and drug use. Although this study is based on the assumption that exposure to adversity precedes substance use, this relationship is likely bidirectional. Second, Miami is a unique social environment, and the pattern of findings reported here may not be generalizable to other major metropolitan areas. The immigrant population in Miami differs considerably from other immigrant destinations, with a higher population and social prestige of Cubans and other Latin American immigrants. Finally, we lacked the statistical power to assess each generational category separately.

By incorporating Rumbaut’s (2004) immigrant generational typology, we are able to offer a more precise analysis of the differences in stress exposure and drug use by generation. Capturing the differing experiences of immigrants based on their place of birth, age at arrival, and parental nativity potentially allows for a more nuanced look at the relationship between stress exposure, immigrant generation, and substance abuse. Although data limitations prevented us from utilizing the full range of generations detailed in Rumbaut’s earlier work, our findings clearly confirm that time residing in the United States is positively associated with increases in stress exposure and substance abuse.

Finally, the data that were analyzed for this study are now somewhat dated. It is possible that the relationships uncovered in this analysis between immigrant generation, exposure to stress, and substance use may have shifted over the nearly two decades since these data were initially collected. This is

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**Table 4.** Substance Use (Standardized) Regressed on Generational Status and Stress (*N* = 795).

| 1       | 2       | 3       | 4       | 5       |
|---------|---------|---------|---------|---------|
| Female  | -.334***| -.332***| -.320***| -.276***| -.261***|
| Student | -.278***| -.282***| -.259***| -.168*  | -.126# |
| Socioeconomic status (centered) | .042 | .033 | .016 | .048 | .031 |
| Cuban   | .110    | .068    | .131#   | .093    | .142*  |
| Generation 1.25/1.5 (G15) |        | -.180#  |        |        |        |
| Generation 1.75/2 (reference) |        |        |        |        |        |
| Generation 2.5+ (G25) |        |        | .387***|        | .334***|
| Stress exposure (centered) |        |        |        | .269***| .240** |
| G15 × stress |        |        |        | -.022   |        |
| G25 × stress |        |        |        |        | .298** |
| Constant | .295    | .353    | .208    | .240    | .103   |
| R²      | .043    | .048    | .061    | .118    | .139   |

*p < .10. *p < .05. **p < .01. ***p < .001.*
so because the size of Hispanic immigrant populations and the level of receptiveness that they have received upon arrival to the United States has waxed and waned over time. Recent Hispanic immigrants have experienced more hostile receptions compared to those arriving in the last third of the past century. Thus, it is likely that the magnitude of the relationships presented here are conservative compared with those of more recent arrivals.

One advantage of this study is that we utilize a comprehensive assessment of stress exposure by employing an array of stress measures, including recent life events, chronic stress, life traumas, day-to-day discrimination, and major discrimination events. With these measures, we are better able to effectively capture exposure to social stress than has been possible in previous studies. It is important to note that in our preliminary analysis we found that acculturation stress is not associated with substance abuse.

Future research should include longitudinal studies of the relationship between social stress, generational status, and substance abuse. It would also be useful to include other major metropolitan areas with differing immigrant populations. Finally, this research should employ a sample sufficiently large and diverse to employ the full range of immigrant generations that have been previously identified. We hope that this research effort stimulates additional interest on this important issue.

Appendix. Coding Structure for Monthly Alcohol Use.

| Response options | 1–2 drinks | 3–4 drinks | 5–9 drinks | 10–19 drinks | 20+ drinks |
|------------------|------------|------------|------------|--------------|------------|
| Less than monthly | 0          | 0          | 0          | 0            | 0          |
| 1–3 times a month | 2          | 4          | 8          | 16           | 32         |
| 1–2 times a week  | 4          | 8          | 16         | 32           | 64         |
| 3–4 times a week  | 6          | 12         | 24         | 48           | 96         |
| Nearly every day  | 8          | 16         | 32         | 64           | 128        |

Note: Values in the table indicate values assigned in the constructed scale.

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