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Adolescent Neighborhood Environments and Latino Intraethnic Disparities in Trajectories of Serious Violent Behaviors

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Abstract

The purpose of this study was to describe the longitudinal trajectories of risk for serious violent behaviors among Latinos of different ancestry in the United States and to examine the impact of neighborhood perceptions, socioeconomic status (SES), and racial/ethnic and immigrant concentration during adolescence in long-term risk. Guided by sociological theories and life-course frameworks, we utilized data from Mexican ($n = 755$), Cuban ($n = 182$), Puerto Rican ($n = 219$), and other Latino ($n = 289$) respondents who participated in all waves of the National Longitudinal Study of Adolescent to Adult Health. Stratified, weighted, multilevel growth curve models were conducted in Stata 14 MP to determine unadjusted and adjusted trajectories between 13 and 32 years of age for each ancestry group by sex. Violent behaviors decreased over time, and were lower among females of all groups. Puerto Ricans and Cubans had higher risk than Mexicans or other Latinos. Neighborhood factors did not have consistent effects across groups. Neighborhood satisfaction reduced risk among most groups, while social cohesion increased violent behaviors among Mexicans. Neighborhood economic well-being (SES) and proportion of non-Latino Whites had no impact among any group. Living in predominantly Black neighborhoods during adolescence reduced the risk into adulthood among Puerto Ricans, but increased it among other Latinos. Higher neighborhood immigrant concentration was related to higher risk among other Latinos. Initial and long-term risk for violent behaviors differed across Latino ancestry, with slower decreases among Puerto Ricans and Cubans. The impact of neighborhood perceptions, SES, and racial/ethnic and immigrant composition was inconsistent.

Keywords

Latinos/Hispanics; growth curve models; neighborhood contexts; violent behavior; racial/ethnic composition; United States

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Violence is a leading cause of death among Latino adolescents and young adults in the United States (Xu, Murphy, Kochanek, & Bastian, 2016). Latino adolescents have been found at both higher and lower risk for serious violent behaviors compared with non-Latino White and non-Latino Black¹ youth (Estrada-Martínez, Padilla, Caldwell, & Schulz, 2011; Felson, Deane, & Armstrong, 2008; Kann et al., 2016; Sampson, Morenoff, & Raudenbush, 2005). Intragroup disparities among adolescents have been documented by nativity (U.S. vs. foreign-born), immigrant generation, and national ancestry (Burrington, 2015; Estrada-Martínez et al., 2011; Felson et al., 2008; Sampson et al., 2005; Zimmerman & Messner, 2013). Most studies have shown U.S.-born Latinos at greater risk for violent behaviors than foreign-born Latinos. Longitudinal studies have also shown that the majority of first-generation (i.e., foreign-born) youth either never engage in violent behaviors or desist very quickly. The risk for violent behaviors among second-generation immigrants (i.e., children of immigrants) is similar to their third+ generation (i.e., grandchildren of immigrants) counterparts (Bersani, Loughran, & Piquero, 2014; Powell, Perreira, & Harris, 2010). Powell et al. examined trajectories of delinquency by race, immigration, and gender from early adolescence to early adulthood. Findings showed that second- and third-generation Latina girls had the highest risk for violent behaviors of any group, with consistent linear decreases over time. Conversely, Latino boys' risk increased until late adolescence when it began to decline.

An increase in longitudinal studies that disaggregate Latinos samples by generations has not been accompanied by a similar increase in studies that compare violent outcomes among different ancestry groups. The few studies focused on ancestry-based disparities in violent behaviors during adolescence have found Puerto Ricans at highest risk among all Latinos, whereas Mexican and Cuban adolescents had lower risk than Whites (Estrada-Martínez et al., 2011; Felson et al., 2008; Sampson et al., 2005). Based on these findings, a key follow-up question is to what extent does the pattern of ancestry-based disparities in violent behaviors during adolescence continue into adulthood. The purpose of this study is to describe the longitudinal trajectories of risk for serious violent behaviors among Latinos of different ancestry and to examine the impact of neighborhood perceptions, socioeconomic status (SES), and racial/ethnic and immigrant concentration during adolescence in long-term risk.

Life-course frameworks have been increasingly used in public health and sociological research. Fundamental to this perspective is the idea of health as a dynamic trajectory unfolding over time and the impact of interactions between economic, social, and cultural environments in modifying individual trajectories (Halfon & Hochstein, 2002). When it comes to mental health, the timing, duration, and context of exposure to psychosocial stressors have implications for poor or resilient trajectories. Perceptions of one's social contexts during adolescence, a sensitive period, have particularly long-term impacts on poor mental health outcomes (George, 2013). Transdisciplinary perspectives on social determinants of health, when combined with culturally and developmentally informed life-

¹This article will refer to non-Latino Whites as "Whites" and non-Latino Blacks as "Blacks."

course approaches, can help guide research on Latinos' risk and protective factors contributing to health trajectories from adolescence into adulthood.

Neighborhood Environments and Latino Youth Violence

Latinos are the largest minority group in the United States and are projected to constitute over 35% of the total population by 2030 (Grieco, 2009). The extreme levels of economic stratification and racial residential segregation in the United States are well documented (Osypuk, Galea, McArdle, & Acevedo-Garcia, 2009) but their impact on violent behaviors among Latinos and other immigrant groups are less understood. Although there is less segregation between Latinos and Whites than between Blacks and Whites, recent evidence points to large variations in residential segregation in regions that are home to different Latino populations (Gonzalez-Wahl, Breckenridge, & Gunkel, 2007).

Social disorganization theory (SDT) has been widely used to study neighborhoods, crime, and violence. It emphasizes that neighborhood SES and racial/ethnic composition (i.e., presence of minorities and immigrants) are important precursors to the development of social ties that maintain control over the behaviors of its residents. Sampson, Raudenbush, and Earls (1997) argued that racial and ethnic diversity within neighborhoods leads to heightened social distance between neighbors, higher residential turnover, fewer institutional investments, limited social resources, and political marginalization. More recently, studies based on SDT have provided ample evidence that the presence of foreign-born immigrants (an indicator of racial/ethnic diversity) decreases risk for crime and/or violence (Lee & Martínez, 2002; Sampson, 2008). The last decade has seen considerable interest in understanding how neighborhood environments affect youth violence and crime among Latino populations. Studies have found the concentration of foreign-born immigrants to be associated with lower risk for violence behaviors among youth living there (Lee & Martínez, 2002; Sampson, 2008). Other evidence suggests that risk is dependent on other neighborhood characteristics and that it does not affect all Latino subgroups in the same way (Bersani et al., 2014; Parker & Stansfield, 2015; Powell et al., 2010; Zimmerman & Messner, 2013).

Latinos' Diverging Pathways and the Distribution of Risk

Theories that explain the social, structural, and cultural assimilation of immigrant groups have gone through dramatic transformations. Classic assimilation theory (Gordon, 1964) stressed that successful adaptation requires structural assimilation where immigrant groups are incorporated into the social and economic institutions *of the dominant group*. Spatial assimilation—the incorporation of immigrant groups into existing *majority* neighborhoods—enhances other forms of structural assimilation, including economic assimilation, intermarriage, and coethnic friendships (Alba & Nee, 1997).

Segmented assimilation theory (SAT) proposes three pathways on which successive generations of immigrant groups become incorporated (Portes & Zhou, 1993): (1) assimilation into the White middle class, (2) assimilation into an urban underclass, and (3) selective assimilation, where the group engages in deliberate preservation of its culture and

values in ethnic enclaves. Building upon these ideas, we expect unique patterns by ancestry to stem from differences in the social environments experienced. It seems especially salient to point out that this pattern of segmentation has at its core a process of racialization that has driven Latino ancestry groups to be differentially integrated into White and Black neighborhoods (Henry-Sanchez & Geronimus, 2013).

Mexican Americans make up 60% of the U.S. Latino population and are the most heterogeneous. Mexican immigrant families often face temporary separations that force parents to rely on extended social networks in ethnic enclaves and traditional ports of entry. This picture changes with later generations who have higher SES and are less segregated from Whites (Portes & Rumbaut, 2006). Puerto Ricans have been U.S. citizens since the Jones Act of 1917, which allows free movement between the island and any U.S. state. By 2008, over half of all Puerto Ricans lived in the U.S. mainland. Puerto Rican families have experienced higher rates of poverty, unemployment, and segregation than other Latinos (Santiago & Galster, 1995). In contrast to Puerto Ricans, the political conflict between the Cuban and U.S. governments has resulted in a small but steady stream of Cuban immigrants. Cuban Americans have the highest income and education levels among all Latino groups, in part because of an economically successful ethnic enclave in South Florida that provides social support (Portes & Rumbaut, 2006).

There is limited information on longitudinal patterns of violent behaviors by Latino ancestry group. Guided by SAT, SDT, and life-course frameworks, we expand upon previous research (Bersani et al., 2014; Estrada-Martínez et al., 2011; Powell et al., 2010; Sampson et al., 2005) to examine longitudinal patterns of serious violent behaviors among multiple Latino ancestry groups, and the impact of neighborhood SES, and racial/ethnic and immigrant composition during adolescence for each group. We hypothesized (1) that there is an overall decrease in risk of violent behaviors with age among all groups; (2) Puerto Ricans to be at highest risk of violent behaviors among all groups into adulthood; (3) males to have higher risk of violent behaviors than females into adulthood; (4) first-generation youth to be at lower risk than third-generation youth; (5) respondents with more positive perceptions of their neighborhoods during adolescence to be at reduced risk for violent behaviors into adulthood; (6) living in increasingly White neighborhoods during adolescence to be associated with lower risk into adulthood, while living in increasingly Black neighborhoods to be associated with higher risk; and (7) having lived in increasingly immigrant neighborhoods during adolescent to be associated with reductions in risk into adulthood.

Method

Participants

Analyses were based on data from the National Longitudinal Study of Adolescent to Adult Health (Add Health), a nationally representative sample of adolescents as they transition into adulthood (Harris, 2013). The current study utilized data from Latinos who responded to *all* waves ($N = 1,849$). At Wave 1 (1994–1995), participants were aged 11 to 21 years, while at Wave 4 (2007–2008) they were aged 24 to 35 years. Due to the small number of Latinos aged 11 to 12 and 33 to 35, we focus on participants aged 13 to 32 years. Add Health oversampled adolescents from various ethnic backgrounds, including Puerto Ricans and

Cubans, allowing for subgroup analyses. Our key independent variables include indicators of Latino national ancestry, age, sex, immigrant generation, and neighborhood contexts. Neighborhood contexts were measured using both subjective and objective indicators. Subjective indicators measure neighborhood perceptions with regard to residential environments, while objective indicators are independent from personal attributes of respondents and correspond to administrative definitions of neighborhood boundaries (Hill & Maimon, 2013).

Measures

Outcome variable.—Serious violent behaviors were measured at baseline (1994–1995), 1 (1995–1996), 6 (2001–2002), and 13 (2008) years afterwards. Subjects were queried about which, if any, of the following behaviors had happened in the preceding year: (1) getting into a serious physical fight, (2) hurting someone badly enough to need medical care, (3) using or threatening to use a weapon to get something from someone, (4) taking part in a fight where a group of your friends was against another group, (5) pulling a knife or gun on someone, and (6) shooting or stabbing someone. Each item was coded as having occurred or not occurred during the previous year. In our study, these six questions were reduced to a single score that represents engaging in serious violent behavior (1) or not (0).

Individual and household variables.—Participants were asked to report on Latino ethnicity and national ancestry. We classified respondents as Mexicans, Cubans, Puerto Ricans, and other Latinos. Although not ideal, we grouped participants who traced their ancestry to Central and South American countries into a single category of “other Latinos” due to small sample sizes. Participants’ and their parents’ place of birth were used to create a measure of immigrant generation that indicated whether a respondent was first (foreign-born with both foreign-born parents), second (U.S.-born with at least one foreign-born parent), or third+ (U.S.-born, with both U.S.-born parents) generation. Age was calculated by subtracting interview dates at each wave from participants’ date of birth. The sex of participants was noted at Wave 1.

Subjective neighborhood indicators.—Three subjective indicators of neighborhood environments were included in the analysis. Perceptions of neighborhood satisfaction at Wave 1 (Cronbach’s $\alpha = .61$; Pearson’s $\alpha = .46$) were assessed with “How happy are you living in your neighborhood?” and “If you had to move, how happy or unhappy would you be?” Responses range from *very unhappy* (1) to *very happy* (5). This measure was averaged and higher scores indicate higher satisfaction. Perceptions of neighborhood social cohesion were assessed with four items (Kuder-Richardson [KR-20] $\alpha = .57$) related to interactions with neighbors and neighborhood safety. Items were all true/false or yes/no questions, summed, and resulted in a range of 0 to 4 with higher scores reflecting more social cohesion. Finally, a binary measure of intergenerational roots in the neighborhood was created based on parental responses at Wave 1. Participants whose parents listed being born or having family or close friends as a reason to live in their neighborhood were classified as having roots in the neighborhood.

Objective neighborhood indicators.—Add Health provided U.S. Census information based on participants' home addresses. In this study, neighborhoods were defined as census tracts. Guided by results from a confirmatory factor analysis, we created a neighborhood SES measure (Cronbach's $\alpha = .88$) that included the proportions of families with annual incomes >US\$75,000; individuals in managerial/professional occupations; adults aged 25+ years with college degrees; 16- to 19-year-olds who were not in school, labor force, or military, and have not completed high school/General Educational Development (GED); families under the poverty line in 1989; and total unemployment rate. The last three items were reversed so higher scores indicate higher SES. Guided by prior studies on residential segregation (Friedman, 2008) and the geographic distribution of Latino respondents in the Add Health sample, we created three ordinal measures of racial/ethnic composition: a three-level indicator of the proportion of White residents (<40% = 0; 40%–80% = 1; >80% = 2); and five-level indicators of the proportion of Black residents (5% = 0; >5%–10% = 1; >10%–20% = 2; >20%–50% = 3; >50% = 4), and the proportion of foreign-born residents (5% = 0; >5%–10% = 1; >10%–20% = 2; >20%–30% = 3; >30% = 4). We note that the proportion of the population identified as Hispanic/Latino by the U.S. Census was strongly and positively associated with the proportion identified as foreign-born. We used the latter in order to avoid multicollinearity.

Covariates.—Other demographic indicators included household composition (two parents = 0), and standardized measures of participants' household SES at Wave 1 and Wave 4 based on indicators of occupation, educational attainment, and poverty. We also included a measure of residential stability at Wave 1 based on the proportion of owner-occupied and long-term residents (5+ years) households (Cronbach's $\alpha = .57$; Pearson's $\alpha = .46$), where higher values indicate more stable neighborhoods.

Data Analyses

Analyses were stratified by national ancestry to examine each group's trajectory and risk and protective factors; they were also weighted to achieve nationally representative results (Chen & Chantala, 2014). Statistics in Table 1 were calculated among each group, and differences examined with chi-squares and bivariate regressions adjusted for complex survey designs. Multilevel growth curve models (GCM) were used to assess individuals' change in violent behaviors from adolescence to adulthood. As an extension of multilevel models (Raudenbush & Bryk, 2002), we fit models where multiple observations of an individual were nested within a person, who in turn was nested within a school. Stata 14 MP has the capacity to conduct multilevel, mixed-effects models using the Add Health multilevel sampling weights. We used the user-written program, probability-weighted iterative generalized least squares (PWIGLS) Method 2, to create group-specific multilevel scaled weights (Chantala, Blanchette, & Suchindran, 2011). Missing data were handled via multiple imputation using chained equations for panel data. All GCMs estimates shown are based on the pooled estimates from separate growth curves in each of the imputed data sets (Lloyd, Obradovic, Carpiano, & Motti-Stefanidi, 2013).

To assess individual change trajectories, and examine patterns of influence on those trajectories, we fit three-level mixed-effects linear models, where Level 1 represents

individual change, Level 2 is a vector of fixed individual, household, and neighborhood characteristics, and Level 3 accounts for the school-level clustering with robust standard errors. We included random effects for Level 2 and Level 3 clustering. We first fitted multilevel, unconditional models for each group separately to calculate the ICC, which indicate the proportion of the variance that may be attributed to participants' growth trajectories for an outcome (Level 1 within-individual variation) and the differences between participants' trajectories (Level 2 between-individual variation; Raudenbush & Bryk, 2002). Listed in Table 2, the ICCs indicate that individual differences explain more variance than schools for all the Latino subgroups. Among Mexicans, we found that 19.0% of the variance was attributed to individual-level differences. This increased to 23.4% among Cubans, 25.5% among Puerto Ricans, and 49.2% among other Latinos.

Following the recommendation by Raudenbush and Bryk (2002), we modeled violent behaviors over time before any covariates of interest were included in a GCM. Age at each wave was used as an indicator of time. To examine the first research question, a set of models were fitted that included linear and quadratic age polynomials, as well as their interactions with sex (*males* = 0). Only significant interactions were retained in final models. Once the right change trajectory was established for each group, GCMs with individual, household, and neighborhood covariates were fitted to examine early contextual influences on trajectories.

Results

Sample Description

Table 1 shows weighted means and standard errors for violent behaviors, independent, and control variables. Respondents who engaged in violent behaviors differed by ancestry at every wave. Puerto Ricans had the highest risk at Wave 1, $F(1, 120) = 2.66, p < .001$; Wave 3, $F(1, 118) = 1.81, p < .001$; and Wave 4, $F(1, 117) = 8.01, p < .001$. Mexicans had the highest risk at Wave 2, $F(1, 117) = 6.50, p < .001$.

Groups differed in all demographic variables, including age and sex distribution. Other Latinos were older than Mexicans and Puerto Ricans at Wave 1, $F(3, 118) = 3.25, p < .05$. Cubans were more likely to be female, while Puerto Ricans were more likely to be male, $F(1, 120) = 3.18, p < .001$. Mexicans and Puerto Ricans were more likely to be third generation, while Cubans and other Latinos were more likely to be first generation, $F(2, 215) = 6.77, p < .001$. Puerto Ricans and other Latinos had higher total family SES during adolescence, $F(3, 114) = 11.5, p < .001$, while Mexicans and Puerto Ricans had higher adult SES, $F(3, 111) = 3.83, p < .05$. Household composition differed across groups, $F(11, 1418) = 24.53, p < .001$; Mexicans and Puerto Ricans were more likely to have lived in single-parent households; Cubans and Puerto Ricans were more likely to have grown up in households with a single parent and adult kin. Other Latinos were most likely to live in households with both parents and adult kin.

Latinos differed in neighborhood satisfaction, $F(3, 117) = 1.98, p < .001$, perceptions of social cohesion, $F(3, 118) = 4.27, p < .01$, neighborhood residential stability, $F(3, 118) = 5.30, p > .01$, and neighborhood SES, $F(3, 118) = 11.73, p < .05$, during adolescence.

Cubans reported significantly lower levels of perceived neighborhood social cohesion than Mexicans or Puerto Ricans. Other Latinos and Puerto Ricans lived in neighborhoods with higher SES than Cubans or Mexicans. Groups also differed in their distribution of neighborhood racial/ethnic composition. Puerto Ricans were most likely to have lived in primarily White, $F(2, 200) = 3.53, p < .001$, or Black, $F(2, 250) = 7.96, p < .001$, neighborhoods. Cubans were more likely to live in neighborhoods over 35% foreign-born, $F(1, 120) = 348.62, p < .001$. Most respondents lived in neighborhoods where less than 5% of the population was Black.

GCMs

Unadjusted age/sex trajectories.—Figure 1 shows the predicted probabilities for violent behaviors for each subgroup by sex. Among females, Cubans had a lower risk than other groups during early adolescence; however, there were consistent decreases during adolescence among all groups, reaching near-zero levels during their early 20s. Among males, Mexicans and Puerto Ricans showed a consistent, linear decrease over time, reaching near-zero levels in their early 30s. Risk among Cuban and other Latino males increased in adolescence, then decreased until reaching near-zero levels by age 25.

Adjusted GCMs.—Table 2 displays odds ratios and confidence intervals by group. Figure 2 shows the adjusted predicted probabilities for violent behaviors by ancestry group and sex.

Mexicans.—Mexicans showed a consistent linear decrease in risk for violent behaviors, with males having higher risks than females through their late 20s. The risk for females in the adjusted model was approximately 10% less than in the unadjusted model, suggesting that higher family and neighborhood contexts have an impact on risk among Mexican females. First-generation Mexican youth were at 43% lower odds for violent behaviors than their third-generation counterparts. Each unit increase in perceived neighborhood social cohesion during adolescence increased odds by 17%. Neighborhood residential stability during adolescence was associated with 27% reduced odds for violent behaviors.

Cubans.—Risk for violent behaviors among Cubans started out at high levels and decreased linearly over time. Relative to females, Cuban males had a slower rate of decrease in risk during late adolescence and begin a rapid decrease reaching near-zero levels by their mid-30s. First-generation Cubans were at 83% reduced odds for violent behaviors than their third-generation counterparts. Neighborhood satisfaction during adolescence reduced the odds for violence into adulthood by 29%. Over 75% of Cubans lived in neighborhoods as adolescents where less than 5% of the population were Blacks, and over 35% were foreign-born. Because of this extreme distribution, we tailored this analysis to examine living in increasingly White neighborhoods only and found no significant differences in risk. Of interest, adjusted models among this group revealed significantly higher risk for violent behaviors over time than the unadjusted models.

Puerto Ricans.—Puerto Ricans showed a higher risk of violent behaviors during early adolescence. Similar to Mexicans and Cubans, the full model among Puerto Ricans showed a linear decrease in risk with significant sex differences. Net of covariates, the risk among

Puerto Rican females decreased at a pace similar to that of Puerto Rican males, albeit males had slightly higher risk at all ages. We found no evidence of long-term generational differences among Puerto Ricans. Higher levels of neighborhood satisfaction during adolescence were associated with 38% reduced risk. Living in neighborhoods with higher proportion of Blacks was associated with reduced odds of violence into adulthood. Compared with those who lived in neighborhoods where less than 5% of the population was Black, Puerto Ricans who grew up in neighborhoods over 50% Black were at 98% reduced odds of violent behaviors into adulthood.

Other Latinos.—Family and neighborhood factors accounted for sex differences in trajectories of risk among other Latinos. Net of covariates, risk reached near-zero levels by late adolescence among females and by their mid20s among males. First-generation other Latinos were at 74% reduced odds of violent behaviors than their third-generation counterparts. Neighborhood composition was a key factor among this group. Living in neighborhoods where over 50% of the population was Black was associated with nearly a tenfold increase in risk. Having lived in neighborhoods with higher proportions of foreign-born persons during adolescence was associated with increased risk at all categories.

Discussion

Violent behaviors are a key indicator of behavioral health among adolescents and an important precursor for multiple health outcomes into adulthood. Those who engage in violent behaviors are, by definition, exposed to higher rates of violence and traumatic events, and are more likely to suffer injuries that require medical attention and have negative mental health outcomes (e.g., anxiety, depression, posttraumatic stress disorder [PTSD]; J. S. Brook, Lee, Finch, Brown, & Brook, 2013). In this study, we described longitudinal patterns of risk for serious violent behaviors among Latinos of different ancestry and examined the impact of neighborhood SES and racial/ethnic and immigrant composition during adulthood on long-term risk. To our knowledge, this is the first study to examine long-term trajectories by Latino ancestry groups using a nationally representative sample.

Consistent with other population-based studies of violent outcomes (Piquero, 2008; Sampson et al., 2005), our findings showed that the majority of Latino respondents did not engage in violent behaviors at any wave. The risk among those who did engage in violent behaviors peaked during adolescence and decreased with age. However, 19% of the sample engaged in violent behaviors at least once between the ages of 18 and 32. This age group is especially concerning, given the negative health, economic, and social implications of this behavior during early adulthood. Prior studies have shown that violent behaviors during emerging adulthood hinder transitions into adult employment, advanced schooling, and independent living (Powell et al., 2010).

Results from this study showcase distinct patterns across Latino ancestry and gendered experiences. We had hypothesized, based on prior research, that Puerto Ricans would have higher levels of risk into adulthood (e.g., Estrada-Martínez et al., 2011; Felson et al., 2008). However, our findings did not support this hypothesis. Although we found high risks among Puerto Rican youth, they did not differ from Mexicans in the unadjusted models or Cubans

in the adjusted models. Results from the full models showed that Puerto Ricans and Cuban males had similarly high levels of risk into adulthood, as well as a slower desistance from violent behaviors than Mexicans or other Latinos. Moreover, including individual, household, and neighborhood factors in the full models resulted in dramatically different long-term patterns among Cubans and other Latinos. It is possible that given the low initial risk among Cubans and other Latinos, household and contextual factors would explain much of the variance around higher risk for these groups, but less so for Mexicans and Puerto Ricans, among whom there are less pronounced changes from the unadjusted to the adjusted models.

Consistent with our hypotheses, first-generation youth were at lower risk for violent behaviors among three of the four groups, Puerto Ricans being the exception. These findings corroborate previous studies in that later generation of immigrants have less positive outcomes (Garcia Coll & Magnuson, 2014; Peña et al., 2008). Focused on children's mental health, Bird et al. (2006) found differences by nativity among Puerto Ricans and speculated that the trend could be due to educational opportunities and support systems available in Puerto Rico but not available to Puerto Ricans in the United States. As a colonial territory of the United States, residents of Puerto Ricans are subject to a more ubiquitous presence of American media and products than in other Latin American countries. This may bring up issues regarding discipline, control, and endorsing American mainstream values that contribute to higher rates of violent behaviors in both contexts, as these present challenges to parents' cultural values and beliefs. It is critical for future studies to compare social, economic, and migration dynamics between communities in the United States and sending Latin American countries to better understand the role of assimilation in behavioral risk.

Gender Disparities

Gender-specific findings support our hypotheses. Males had higher risk than females among most groups; unadjusted models among other Latinos showed females had higher initial risk, but decreased at a faster rate than males. In the full models, Mexican and Puerto Rican males showed higher baseline risk of violent behaviors compared with Cuban and other Latino males; among other Latino males, risk increased during adulthood at a time when males in all of other groups showed decreasing of risk. Reingle, Jennings, and Maldonado-Molina (2012) explored the gender-specific trajectories of violent behavior among Latinos using Add Health and found that males were more likely to report higher levels of violent behavior in comparison with females over time. Similarly, Stueve, O'Donnell, and Link (2001) found significant differences between Latino adolescent males and females in violent behavior. These findings partially corroborate our findings in that males were more likely to engage in violent behavior. However, in our study, we explored patterns by Latino ancestry and found each group had its own unique trajectory in both unadjusted and adjusted models, most notably the shift in risk among other Latinos. Our findings extend this current research by corroborating the importance of not only gendered differences, but also the between and within differences among Latinos.

Overall, the inclusion of covariates in the full model highlights the varying conditions in which violent behaviors among females may occur. Females had lower risk for violent

behaviors in most analyses, but a closer look at group-specific patterns shows that Mexican, Puerto Rican, and Cuban females experienced higher levels of violent behavior once context is accounted for, while the opposite association was found among other Latina females. These findings are consistent with Powell et al. (2010) who found Latino girls at increasing risk for nonviolent delinquency until late adolescence, at which point it rapidly declines. Using a sample of Puerto Rican children 7 to 13 years of age, Bird et al. (2006) found that disruptive behavior disorders (a measure that includes violent behaviors) increased with age among girls, which highlights the increased vulnerability during early adolescence. Additional research is needed to understand the contexts of gendered experiences of violent behaviors among females in different Latino groups, especially during adolescence and early adulthood.

Early Neighborhood Influences

Research has identified perceived neighborhood characteristics as associated with the persistence of violent behaviors into adulthood, independent of race and gender (D. W. Brook, Rubenstone, Zhang, & Saar, 2011; J. S. Brook et al., 2013; Lacourse, Nagin, Tremblay, Vitaro, & Claes, 2003). SDT proposes that neighborhood social cohesion and collective efficacy tend to offset poor neighborhood conditions (i.e., low-income, resource deprived) and lessen negative health outcomes (Sampson et al., 1997). Thus, we also explored the extent to which perceptions of neighborhood environments influenced risk for involvement in violent behaviors from adolescence into adulthood. Consistent with our hypotheses, neighborhood satisfaction during adolescence reduced risk into adulthood, except among Mexicans, among whom it had no long-term effect. Contrary to our hypotheses, positive perceptions of neighborhood social cohesion during adolescence was associated with higher risk among Mexicans. It is possible for social cohesion (i.e., knows people in the neighborhood, people in the neighborhood look out for each other, feels safe in the neighborhood; Sampson et al., 1997) to be strong among those who engage and those who do not engage in violent behaviors. For example, those who engage in violent behaviors may associate with violent peers, reinforcing each other's behaviors while strengthening social bonds (Powell et al., 2010). This finding suggests a need for closer study of the mechanisms by which neighborhood peer dynamics influence violent behaviors over time.

There was little evidence that objective neighborhood context influenced violent behaviors once individuals' demographic factors and neighborhood perceptions were accounted for. Contrary to our hypotheses, higher proportion of Whites and neighborhood SES had no long-term impact among any group. Moreover, the impact of living in neighborhoods with higher proportion of Blacks had mixed effects. Among Puerto Ricans, living in primarily Black neighborhoods reduced risk dramatically; conversely, other Latinos living in majority Black neighborhoods had increased risk. In addition, the higher proportion of foreign-born residents in the neighborhood has a detrimental impact among other Latinos.

Future research on behavioral risks should continue to explore the presence, utility, and development of specific social support systems (e.g., peers and church mentors) and how these serve to modify risk among Latinos in neighborhoods of different racial/ethnic and immigrant composition. Furthermore, future research needs to examine the impact of

changing neighborhood characteristics on trajectories of violent behaviors. This work requires time-varying neighborhood-level variables, which are both spatially and time correlated, making these models difficult to examine. Researchers have begun to develop these measures, but have limited their examination to cardiovascular risk (Hirsch et al., 2014).

Limitations

The current study analyzed longitudinal patterns of violence among Latino subgroups from adolescence into emerging adulthood. We used an approach that permitted us to weight our results to achieve nationally representative findings. Furthermore, the study explored self-reported data, providing a more accurate representation of violent behaviors across developmental periods than administrative or teacher/parent-reported surveys would. Despite these strengths, several limitations merit mentioning.

Nearly 55% of the 3,218 Latino participants at Wave 1 did not complete all four waves of data collection. Attrition analyses showed no differences in violent behaviors at any wave. However, Latinos in our sample were younger, less likely to be first or third generation, and have higher household income at Wave 1. They also reported higher levels of neighborhood satisfaction and social cohesion, residential stability, and were less likely to live in neighborhoods with higher proportions of Whites or foreign-born. It is important to note that the analytic weights used in this study were developed by Add Health and account for sample attrition, thus this should not affect results significantly.

Another limitation is that the present study relied solely on quantitative analyses of interview items and is limited in identifying Latino youth and young adults' own understanding and description of their personal experiences over time. Mixed-methods approaches are needed to explore strength-based assets and to learn how access to resources buffers Latinos' involvement in risky violent behavior. It is important to acknowledge that people live with multiple and layered identities based on immigration status, racism, oppression, and structural inequality. An intersectional approach coupled with a qualitative methodology that identifies assets and resources would offset the dearth of research on the unique experiences of Latinos and would aid in the design of preventive interventions for this population.

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Figure 1.
Unadjusted probabilities for serious violent behaviors by Latino ancestry and sex.

Figure 2.
Adjusted probabilities of violent behaviors by Latino ancestry and sex.

Table 1.

Sample Description by Latino Ancestry.

	<u>Mexican <i>n</i> = 755</u>		<u>Cuban <i>n</i> = 182</u>		<u>Puerto Rican <i>n</i> = 219</u>		<u>Other Latino <i>n</i> = 289</u>	
	<i>M</i>	(<i>SE</i>)	<i>M</i>	(<i>SE</i>)	<i>M</i>	(<i>SE</i>)	<i>M</i>	(<i>SE</i>)
Violent behaviors %								
Wave 1	53.4	(.03)	53.2	(.03)	58.3	(.05)	48.8	(.04)
Wave 2	41.1	(.03)	35.2	(.08)	38.4	(.05)	30.4	(.05)
Wave 3	16.6	(.02)	7.5	(.01)	20.2	(.03)	14.8	(.03)
Wave 4	12.4	(.02)	6.9	(.05)	13.4	(.03)	8.1	(.02)
Age								
Wave 1	15.5	(.27)	15.7	(.76)	15.4	(.28)	15.8	(.30)
Wave 2	16.5	(.27)	16.7	(.78)	16.3	(.28)	16.7	(.29)
Wave 3	22.0	(.28)	22.2	(.77)	21.8	(.28)	22.2	(.29)
Wave 4	28.5	(.27)	28.8	(.84)	28.3	(.29)	28.7	(.29)
Females %	47.5	(.03)	59.0	(.05)	45.0	(.04)	52.0	(.03)
Immigrant generation %								
First generation	14.2	(.02)	24	(.04)	3.0	(.01)	30.4	(.07)
Second generation	21.5	(.03)	45	(.07)	12.0	(.03)	19.2	(.04)
Third+ generation	55.0	(.06)	26.2	(.06)	78.2	(.04)	40.0	(.07)
Household income	32.1	(2.2)	29.4	(4.6)	38.8	(3.4)	37.8	(4.6)
Wave 1 family SES	−0.71	(.12)	−0.17	(.17)	−0.29	(.10)	−0.42	(.18)
Wave 4 adult SES	0.13	(.05)	−0.19	(.26)	0.11	(.08)	−0.19	(.11)
Household composition %								
Two parents only	55.9	(.03)	49.6	(.10)	60.5	(.08)	50.6	(.03)
2 parent w/ kin	18.6	(.03)	18	(.03)	6.4	(.02)	24.5	(.03)
Single parent	16.0	(.03)	10.8	(.05)	15.1	(.03)	12.1	(.03)
1 parent w/ kin	7.6	(.01)	18.3	(.03)	15.1	(.06)	9.4	(.02)
Kin, no parent	1.9	(.01)	3.4	(.02)	2.9	(.02)	3.5	(.02)
Neighborhood satisfaction	3.74	(.06)	3.71	(.08)	3.65	(.11)	3.59	(.10)
Social cohesion	2.92	(.07)	2.65	(.11)	2.96	(.09)	2.90	(.12)
Residential stability	−0.66	(.12)	−0.80	(.16)	−0.55	(.12)	−0.62	(.15)
SES	−0.41	(.13)	−0.51	(.19)	−0.12	(.11)	0.06	(.19)
Racial/ethnic composition								
Non-Latino White %								
<40%	37.5	(.08)	76.1	(.11)	28.6	(.07)	41.0	(.11)
40%–80%	38.5	(.06)	9.6	(.06)	29.4	(.06)	30.4	(.07)
>80%	24.0	(.05)	14.3	(.08)	42.0	(.08)	28.7	(.07)
Non-Latino Black %								
<5%	53.1	(.05)	75.3	(.10)	60.2	(.06)	63.3	(.06)
5%–10%	19.6	(.04)	4.8	(.02)	12.1	(.04)	14.4	(.03)
>10%–20%	16.0	(.03)	12.0	(.07)	10.0	(.02)	9.6	(.03)
>20%–50%	5.3	(.02)	4.1	(.05)	6.6	(.02)	4.4	(.02)

	<u>Mexican <i>n</i> = 755</u>		<u>Cuban <i>n</i> = 182</u>		<u>Puerto Rican <i>n</i> = 219</u>		<u>Other Latino <i>n</i> = 289</u>	
	<i>M</i>	(<i>SE</i>)	<i>M</i>	(<i>SE</i>)	<i>M</i>	(<i>SE</i>)	<i>M</i>	(<i>SE</i>)
>50%	6.0	(.01)	3.6	(.02)	11.1	(.05)	8.3	(.03)
Foreign Born %								
<5%	22.0	(.05)	17.0	(.11)	37.8	(.10)	20.0	(.06)
5%–10%	16.0	(.05)	1.1	(.01)	16.2	(.05)	13.0	(.04)
>10%–20%	18.0	(.04)	3.7	(.02)	17.3	(.07)	18.0	(.04)
>20%–35%	43.0	(.08)	5.3	(.02)	22.0	(.10)	29.0	(.08)
>35%	1.1	(.01)	72.9	(.11)	6.7	(.05)	20.0	(.11)

Note. SES = socioeconomic status.

Table 2.

Adjusted Odds Ratios and 95% CIs for Severe Violent Behaviors by Latino Ancestry.

	Mexican	Cuban	Puerto Rican	Other Latino
Level 2 ICC	8.5	14.2	16.6	41.8
Level 1 ICC	19.0	23.4	25.5	49.2
Age	0.80 *** [0.76, 0.84]	0.69 ** [0.54, 0.89]	0.81 *** [0.76, 0.86]	0.32 *** [0.19, 0.54]
Age ²				1.02 *** [1.01, 1.03]
Female ^a	0.34 *** [0.23, 0.49]	0.16 ** [0.04, 0.56]	0.25 *** [0.14, 0.46]	0.22 *** [0.09, 0.52]
Immigrant generation ^b				
First generation	0.57 * [0.34, 0.95]	0.17 * [0.04, 0.56]	1.18 [0.24, 5.82]	0.26 *** [0.12, 0.58]
Second generation	0.82 [0.50, 1.34]	0.34 [0.06, 2.08]	0.58 [0.25, 1.38]	0.46 [0.18, 1.19]
Neighborhood satisfaction	0.88 [0.71, 1.09]	0.71 *** [0.58, 0.87]	0.62 ** [0.43, 0.89]	0.75 [†] [0.55, 1.02]
Social cohesion	1.17 * [1.02, 1.34]	0.92 [0.78, 1.09]	1.24 [0.86, 1.79]	1.02 [0.70, 1.48]
Neighborhood SES	0.75 [0.49, 1.14]	1.75 [0.77, 4.00]	0.63 [0.31, 1.25]	1.19 [0.80, 1.76]
Proportion of non-Latino White ^c				
40%–80%	1.18 [0.51, 2.76]	0.83 [0.05, 12.76]	1.13 [0.47, 2.73]	1.04 [0.33, 3.35]
>80%	1.29 [0.27, 6.18]	1.17 [0.13, 10.29]	0.97 [0.23, 4.05]	0.16 [0.01, 3.41]
Proportion of non-Latino Black ^d				
5%–10%	0.98 [0.52, 1.85]		0.92 [0.24, 3.57]	1.28 [0.43, 3.78]
10%–20%	0.65† [0.41, 1.03]		0.33 [0.06, 1.93]	3.17 [0.61, 16.52]
20%–50%	0.87 [0.35, 2.13]		0.31† [0.08, 1.22]	1.30 [0.35, 4.85]
>50%	1.17 [0.31, 4.50]		0.02 ** [0.00, 0.28]	9.89 ** [1.78, 54.86]
Proportion of foreign-born ^d				
5%–10%	0.66 [0.34, 1.28]		0.80 [0.24, 2.67]	10.84 *** [2.61, 45.07]
10%–20%	0.66 [0.23, 1.94]		1.18 [0.19, 7.25]	6.21 * [1.33, 28.99]
20%–35%	0.61 [0.18, 2.07]		0.26† [0.06, 1.24]	9.55 ** [2.03, 45.01]
>35%	0.38 [0.10, 1.42]		0.31 [0.02, 4.70]	47.57 *** [5.18, 436.53]

Note. Models control for family SES, household composition, and neighborhood residential stability at Wave 1, and adult SES at Wave 4. CI = confidence interval; SES = socioeconomic status.

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^a Males.
^b Third + generation.
^c <40%.
^d <5%.
^e $p < .10$.
^{*} $p < .05$.
^{**} $p < .01$.
^{***} $p < .001$.