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Immigration, Suicidal Ideation and Deliberate Self-Injury in the Boston Youth Survey 2006

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Abstract

The prevalence and immigration-related correlates of deliberate self-injury (DSI) and suicidal ideation (SI) were estimated in a sample of Boston public high school students in 2006. Compared with U.S.-born youth, immigrant youth were not at increased risk for DSI or SI, even if they had experienced discrimination due to their ancestry. By contrast, U.S.-born youth who reported having been discriminated against because of their ancestry had an increased risk of deliberate self-injury (odds ratio [OR] = 3.1, 95% confidence interval [CI] = 1.6–5.9) and suicidal ideation (OR = 2.1, 95% CI = 1.2–3.8). The combination of being U.S.-born and experiencing ancestry-based discrimination identifies youth at increased risk for suicidal behavior.

The process of immigration to the United States and the associated experiences of discrimination on the basis of nativity or ancestry are associated with increased rates of psychiatric disorders among Hispanics (Breslau, Aguilar-Gaxiola, Borges, Castilla-Puentes, et al. 2007; Breslau, Aguilar-Gaxiola, Borges, Kendler, Su, & Kessler, 2007; Escobar & Vega, 2000; Vega, Kolody, Anguilar-Gaxiola, Alderete, Catalano, & Caraveo-Anduaga, 1998), White non-Hispanics, (Breslau Aguilar-Gaxiola, Borges, Castilla-Puentes, et al., 2007; Breslau, Aguilar-Gaxiola, Borges, Kendler, et al., 2007; Grant, Stinson, Hasin,

Dawson, Chou, & Anderson, 2004), and Asians (Takeuchi et al., 2007). The relative risk appears to depend on gender, the specified psychiatric disorder in question, and the origin of the immigrant group (Alegria, Canino, Stinson, & Grant, 2006; Alegria et al., 2007; Takeuchi et al., 2007). Evidence regarding the impact of immigration to the United States on suicidal behavior, however, is mixed, with some studies finding an increase in suicidality among immigrants (e.g., among second and third generation youth compared with their foreign-born counterparts; Hovey & King, 1996; Peña et al., 2008; Zayas, Lester, Cabassa, & Fortuna, 2005), but others not (Fortuna, Perez, Canini, Sribney, & Alegria, 2007; Leong, Leach, Yeh, & Chou, 2007; Peña et al., 2008; Roberts, Roberts, & Xing, 2007; Sorenson & Shen, 1996; Wadsworth & Kubrin, 2007).

Although some studies have identified risk factors that help explain patterns in suicidal behavior by immigrant status, few have examined the role of discrimination based on ancestry or nativity status (Canino & Roberts, 2001; Peña et al., 2008; Turner, Kaplan, Zayas, & Ross, 2002; Zayas et al., 2005). In fact, we found only one study among adolescents that examined the relationship between suicidality and nativity-related discrimination. This study focused on immigrant youth of Mexican ancestry and found that suicidal ideation was higher among immigrant youth who reported experiencing discrimination based on their ancestry, compared with youth who did not report experiencing this form of discrimination (Tortolero & Roberts, 2001). As such, the role of immigrant/ancestry-based discrimination in suicidal behavior among youth remains poorly understood.

The current paper builds on prior work that has examined adolescent suicidality in relation to (a) immigrant status and (b) perceived discrimination based on ancestry by examining whether suicidality depends on an interaction between immigration status and such perceived discrimination. Outcomes in our study include and distinguish between suicidal ideation and deliberate self-injury. Analyses take into account several immigration related variables that have not previously been extensively examined. These include generation, time spent in the United States, and whether English was the main language spoken at home. Our study focuses on youth in Boston, MA, a city where approximately one in four residents are foreign born and the likelihood that a child has at least one immigrant parent is even higher (Lima, 2009).

METHODS

Sample Selection

Data for this investigation come from the 2006 Boston Youth Survey (BYS), a biennial survey of high school students (9th–12th graders) in selected Boston public high schools. We used a two-stage, stratified random sampling strategy. The first sampling frame consisted of all 37 eligible high schools in the Boston public schools system. Thirty schools were randomly selected for the survey, with a probability of selection proportional to each school's enrollment size. One school was not invited because it was comprised primarily of adult students. Eighteen schools agreed to participate. Among the 18 participating schools, we generated a numbered list of unique homeroom classrooms within each school. First, classrooms comprised of students with severe physical or cognitive disabilities were

excluded. Next, classrooms were stratified by grade, and then randomly selected for survey administration within each grade. Those classrooms that listed fewer than five students were skipped and the next randomly selected classroom was chosen. Selection continued until the total number of students to be surveyed ranged from 100 to 124 per school. In the two selected schools that had total enrollments close to 100, all students were invited to participate.

Data Collection

The BYS data collection instrument was developed by study staff. The instrument covered a range of topics (e.g., health behaviors, use of school and community resources, developmental assets, and risk factors), but had a particular emphasis on violence. The paper-and-pencil survey was administered in classrooms by BYS staff in the spring of 2006. BYS survey administrators completed a brief training program prior to going into the schools. All personnel underwent training at the Harvard School of Public Health in the ethical treatment of human subjects. Surveys were not marked with any information that could identify an individual. Passive consent was sought from students' parents prior to survey administration. Any student whose parents sent back a form denying permission for the student to participate in the survey was not given one; this was the case for less than 1% of students. Survey administrators read an introduction and the informed consent statement prior to distributing the survey. About 5% of the 1,323 invited students declined to participate. Survey administrators remained in the room and were available to answer questions throughout the 50 min allotted for the survey. The Human Subjects Committee at the Harvard School of Public Health approved all procedures for this research.

Measures

Dependent Variables—The main outcomes of interest in this study were deliberate self-injury and suicidal ideation. The BYS instrument assessed deliberate self-injury with one question which asked: “In the past 12 months, did you ever cut or otherwise injure yourself on purpose?” Suicidal ideation was assessed with one question which asked: “In the past 12 months, did you ever seriously consider attempting suicide?”

Key Independent Variables—Our main predictor of interest was immigrant status. Rather than simply examining suicidal behavior by nativity, we capitalized on the multiple immigration-related variables in the BYS data. Specifically, we combined nativity and length of time in the United States to create a variable (nativity/time in United States) with the following categories: U.S.-born/ 1 U.S.-born parents; U.S.-born/ foreign-born parents; foreign-born with >4 years in United States; and foreign-born with 4 years in United States. Similar methods have been used in previous studies of immigrant samples (Alegria et al., 2007).

We also asked participants whether English was the main language spoken at home. The final immigration-related variable we examined was discrimination on the basis of ancestry/nativity. This information was ascertained by asking: “In the past 12 months, have you felt discriminated against because you or your family is from another country?” To look at the dual impact of nativity and nativity-based discrimination, we created a new variable with the

following four categories: U.S. born/discriminated against; foreign-born/discriminated against; U.S. born/not discriminated against; and foreign-born/not discriminated against.

Race and ethnicity were assessed by asking respondents if they were of Hispanic or Latino descent and which of the following categories best described their race: White, Black/ African American, American Indian or Alaska Native, Asian, Native Hawaiian, or Pacific Islander. Respondents with Hispanic or Latino descent were classified as Hispanic. Students had the option of marking multiple racial groups. Non-Hispanics were classified according to the category which best described their race. For this particular analysis we combined Hispanic/Latino ethnicity and race to create a race/ethnicity variable with the following four categories: (a) Hispanic/Latino; (b) non-Hispanic, Black/ African American (which we will simplify as “Black”); (c) non-Hispanic, White (which we will simplify as “White”); and (d) Other, which included bi- or multiracial students, Asians, Native Americans, and other racial groups.

Additional characteristics measured included age, gender, grade level (9th–12th), whether the student lived with one or two parents, and the number of hours that the student worked per week at a job. We also included variables that were plausibly associated with deliberate self-injury and suicidal ideation. These were depressive mood (feeling sad, grouchy, or irritable, or in a bad mood; feeling hopeless; having sleep problems, and having difficulty concentrating on school work), substance use (alcohol, marijuana, methamphetamines, and other drug use), and being a victim of violence (having been punched with a fist, kicked, choked, or beaten up; having been threatened or attacked with a gun, having been attacked with other weapon).

Analysis—Descriptive characteristics were generated and chi-square tests employed to determine the extent to which demographic variables were associated with nativity/time in United States. Because both outcomes varied largely across schools, and there have been negative (Mercy et al., 2001) and positive (Poijula, Wahlberg, & Dyregrov, 2001) reports on suicide contagion within schools, we used a conditional logistic regression with school as strata to assess the association between nonsuicidal self-injury and suicide ideation with immigration and other covariates (Hosmer & Lemeshow, 2000). Statistical significance was evaluated using two-tailed .05-level tests.

RESULTS

A total of 1,253 surveys were collected in the 18 schools. The surveys of students with missing data on nonsuicidal self-injury or suicide ideation were excluded from analysis. A total of 1,004 (81% of the original sample) respondents had valid information for both outcomes. Nonrespondents (those with missing data on both outcomes) were more likely to be male, Black, in grades 9 or 10, and to be living in households with no parents. There were no differences by age or number of hours that the student worked during the week (data not shown).

The demographic information of the sample according to key demographic variables is presented in Table 1. There were no differences in the distribution of age, sex, grade, and

working status across the nativity/ time in United States groups. Blacks were the predominant group except among the U.S.-born/foreign parents and the foreign-born/ 4 years in United States, where most of the youth were Hispanic. Foreign-born youth/>4 years in United States were the most likely to live in a household with no parents.

The overall prevalence of deliberate self-injury and suicidal ideation in the past 12 months was 7.6% and 8.6%, respectively. There were few associations between a series of demographics factors and the two outcomes (Table 2). Those students who worked more than 20 hours per week were significantly more likely to engage in deliberate self-injury (odds ratio [OR] = 2.5, 95% confidence interval [CI] = 1.3–4.7) compared with those youth who did not have a job. Crude associations between a series of immigration-related variables and other known risk factors for deliberate self-injury are shown in Table 3. There were no significant associations between either outcome of interest and nativity/time in United States, English as the main language spoken at home, or the nativity/ethnicity variable. However, being both U.S.-born and discriminated against because of one's own or one's family's nativity was associated with increased odds of deliberate self-injury (OR = 3.1, 95% CI = 1.6–5.9) and suicide ideation (OR = 2.1, 95% CI = 1.2–3.8) compared with those who were U.S. born and not discriminated against. Depressive mood, substance use, and reporting violence were all associated with increased odds of deliberate self-injury and suicide ideation.

The results of a series of multiple conditional logistic regressions that controlled for sociodemographic variables and depressive mood, substance use, and violent victimization are shown in Table 4. The results are similar to our crude estimates: only those youth born in the United States who reported having been discriminated against on the basis of their ancestry were at increased risk for deliberate self-injury and suicide ideation (OR = 3.2, 95% CI 1.5, 6–9; OR = 2.3, 95% CI 1.1–4.6, respectively). In all models, depressive mood, substance use, and violent victimization were associated with increased odds of deliberate self-injury and suicidal ideation (data not shown).

DISCUSSION

In contrast to previous studies that demonstrated that U.S.-born youth have an increased risk of suicidal behavior relative to their foreign-born counterparts (Hovey & King, 1996; Peña et al., 2008; Zayas et al., 2005), we did not find this to be the case in a representative sample of Boston public high school students. Regardless of nativity or time spent in the United States there were no differences in risk of deliberate self-injury or suicidal ideation based on immigrant status. However, we did find that U.S.-born youth who reported having been discriminated against because of their own or their family's nativity had a significantly increased risk of deliberate self-injury and suicidal ideation compared to U.S.-born youth who do not report such discrimination. This finding suggests that the dissonance between being U.S.-born and yet still perceived as somehow less than fully integrated into mainstream U.S. culture may be a powerful source of distress.

Previous studies that found U.S.-born youth have higher rates of suicidal behavior than their foreign-born counterparts did not examine the potential contribution of discrimination-based

ancestry or nativity. It is unclear why foreign-born youth who report a history of discrimination are not also at increased risk for suicidal behavior. One possible explanation is that foreign-born youth, even if exposed to such discrimination, are buffered against consequential suicide-related effect because they are more likely to live in and identify with ethnic enclaves (Portes & Rumbaut, 2001; Portes & Zhou, 1993; Suarez-Orozco & Carhill, 2008).

Although our results regarding known risk factors (e.g., female gender, depressed mood, substance use, and violence victimization) for both deliberate self-injury and suicide ideation are consistent with prior research more broadly (Nock, Borges, Bromet, Cha, Kessler, & Lee, 2008), inferences based on our results must be considered in light of certain limitations. For example, nonresponse bias is an important potential limitation of this work. Only 18 of the invited 30 schools participated in survey administration. However, those schools that chose not to participate in the survey were similar to schools that did participate on characteristics such as racial composition and drop-out rate. Moreover, school headmasters' main reasons for not participating related primarily to scheduling, logistics, and coordinating end-of year standardized academic testing, rather than reasons that could plausibly bias our findings. A comparison of the demographic composition of our student sample and that of the overall Boston public schools population showed no important differences by race/ethnicity and neighborhood of residence (Boston public school students are bused throughout the city).

There is also a potential for nonresponse bias at the individual level. The survey was administered during homeroom, which is generally the first period of the school day. Students who were tardy began the survey late or along with those students who did not attend first period or school that day missed completing the survey altogether. As noted, 18.6% of those who did get the survey did not complete the section on deliberate self-injury, with noncompletion rates higher among males, Blacks, and those in grades 9 or 10. Being male and Black are associated with lower rates of suicidal ideation in nationally representative samples of students, but being in 9th and 10th grades are associated with higher prevalence (Eaton et al., 2006). Nevertheless, we took sex and ethnicity into account in our multivariate statistical models. Our findings are also subject to the limitations of much of survey research (e.g., respondents may provide inaccurate answers for a variety of reasons). This problem is reduced somewhat in anonymous surveys such as ours (Bradburn, 1983).

Despite these limitations, our study has several strengths. First, the majority of work on suicidal behavior among immigrants in the United States has focused on Mexicans as the largest immigrant group, often to the exclusion of other immigrant groups. Although we could not disaggregate our data by country of origin due to the small sample size, we captured many common immigrant groups in the city of Boston, including Chinese, Haitians, Dominicans, Vietnamese, Cape Verdean, Jamaicans, and Brazilians (Lima, 2009), many of whom have been overlooked in immigrant studies (Epstein, Williams, & Botvin, 2002; Wheeler & Mahoney, 2008). Studies of the effect of perceived discrimination on suicidal behavior are not new and the role of sexual orientation-based discrimination on suicidal behavior and mental health has been extensively investigated (Almeida, Johnson,

Corliss, Molnar, & Azrael, 2009; Bontempo & D'Augelli, 2002; Clements-Nolle, Marx, & Katz, 2006; Mays & Cochran, 2001). However, while researchers have tried to explain why U.S.-born youth have higher rates of suicidal behavior than their foreign-born peers (Canino & Roberts, 2001; Peña et al., 2008; Turner et al., 2002; Wadsworth, 2007; Zayas et al., 2005), few, if any, have examined the role of perceived discrimination on the basis of ancestry/nativity (Garcia & Lindgren, 2009). The mechanism for the distress associated with experiencing discrimination for this group of youth is unclear and also warrants further investigation.

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TABLE 1
 Distribution of the Sample According to Immigration and Time Spent in the United States 2006 Boston Youth Survey

	Immigration (Sample size)				χ^2 (p)
	U.S.-born/ U.S.-born parent (424) %	U.S.-born/ foreign-born parents (279) %	Foreign-born >4 year in the United States (73) %	Foreign-born 4 year in the United States (186) %	
Age, year					
14	7.1	8.2	2.7	4.3	18.8 (.09)
15	21.3	26.5	24.7	19.9	
16	30.3	25.1	27.4	25.8	
17	27.0	25.8	23.3	26.3	
18	14.2	14.3	23.7	23.7	
Gender					
Male	45.4	37.5	39.7	40.3	4.6 (.20)
Female	54.7	62.6	60.3	59.7	
Grade					
9	29.2	30.1	22.2	24.0	10.7 (.30)
10	24.4	24.3	33.3	27.9	
11	32.8	29.4	27.8	27.3	
12	13.6	16.3	16.7	20.8	
Race/ethnicity					
Hispanic	19.4	44.0	26.0	38.2	144.6 (<.01)
Non-Hispanic/Black/African American	48.2	39.9	52.1	41.9	
Non-Hispanic/other ^a	5.6	13.6	17.8	13.4	
Non-Hispanic/White	26.9	2.6	4.1	6.5	
Household composition					
No parents living with youth	10.3	7.7	25.8	12.6	27.8 (<.01)
One parent living with youth	49.3	42.0	42.4	42.9	
Two parents living with youth	40.4	50.4	31.8	44.5	
Work status					
Don't have a job	60.5	67.0	78.6	58.5	14.1 (.12)
<10 hr/week	10.9	11.7	7.1	11.5	

	Immigration (Sample size)				χ^2 (p)
	U.S.-born/ 1 U.S.-born parent (424) %	U.S.-born/ foreign-born parents (279) %	Foreign-born >4 year in the United States (73) %	Foreign-born 4 year in the United States (186) %	
Between 10 and 20 hr/week	16.7	12.5	10.0	17.5	
20 hr/week	11.9	8.8	4.3	12.6	

^aIncludes biracial and multiracial students, Asians, Native Americans, and students who were neither Hispanic/Latino nor were unable to classify themselves into a race category.

Crude Associations of Sociodemographic Correlates of 12-month Nonsuicidal Self-Injury and Suicidal Ideation in the 2006 Boston Youth Survey

TABLE 2

	Deliberate self-injury			Suicidal ideation		
	Yes (%)	OR ^a	95% CI	Yes (%)	OR ^a	95% CI
Age, year						
14	7.5	1		10.5	1	
15	6.9	1.1	0.3–3.4	7.0	0.6	0.2–1.6
16	7.9	1.4	0.5–4.2	7.8	0.7	0.3–1.8
17	7.2	1.2	0.4–3.8	11.0	1.0	0.4–2.5
18	9.1	1.9	0.6–6.0	7.8	0.9	0.3–2.4
Gender						
Male	7.1	1		5.2	1	
Female	8.0	1.0	0.6–1.6	11.0	2.2	1.3–3.8
Grade						
9	9.0	1		9.5	1	
10	5.3	0.7	0.3–1.4	6.6	0.7	0.3–1.3
11	7.0	0.9	0.5–1.6	9.0	0.9	0.5–1.6
12	9.9	1.7	0.8–3.5	9.1	1.3	0.6–2.7
Race/ethnicity						
Hispanic	8.2	1		9.8	1	
Non-Hispanic/Black	6.9	0.8	0.5–1.4	7.4	0.7	0.4–1.2
Non-Hispanic/other ^b	9.2	1.0	0.4–2.4	8.6	0.7	0.3–1.7
Non-Hispanic/White	8.0	1.1	0.5–2.5	9.6	0.8	0.4–1.7
Household composition						
No parents living with youth	7.8	1		8.6	1	
One parent living with youth	6.2	0.9	0.4–2.0	7.8	0.9	0.4–1.9
Two parents living with youth	9.2	1.4	0.6–3.2	9.3	1.0	0.5–2.2
Work status						
Do not have a job	6.7	1		7.4	1	
10 hr/week	7.3	1.1	0.5–2.5	9.2	1.2	0.6–2.5
Between 10 and 20 hr/week	7.8	1.3	0.7–2.6	11.7	1.5	0.8–2.8

	Deliberate self-injury		Suicidal ideation	
	Yes (%)	OR ^a	Yes (%)	OR ^a
20 hr/week	14.9	2.5	10.8	1.5
			95% CI	95% CI
			1.3–4.7	0.7–2.9

^aOdds ratio (OR) from conditional logistic regression.

^bIncludes biracial and multiracial students, Asians, Native Americans, and students who were neither Hispanic/Latino nor were unable to classify themselves into a race category.

Crude Associations of Immigration, Depressive Mood, Substance Use, and Violence with 12-month Deliberate Self-Injury and Suicidal Ideation in the 2006 Boston Youth Survey

TABLE 3

	Deliberate self-injury			Suicidal ideation		
	Yes (%)	OR ^a	95% CI	Yes (%)	OR ^a	95% CI
Nativity/time in United States						
U.S.-born/ 1 U.S.-born parent	7.7	1		8.9	1	
U.S.-born/foreign-born parents	6.4	0.9	0.5-1.6	9.6	1.2	0.7-2.0
Foreign-born/>4 yrs in the United States	6.8	0.8	0.3-2.3	2.7	0.4	0.1-1.6
Foreign-born/ 4 yrs in the United States	9.5	1.3	0.7-2.4	9.6	1.1	0.6-2.1
Immigration and ethnicity identification						
Non-Hispanic/U.S.-born	7.5	1		8.8	1	
Non-Hispanic/foreign-born	7.5	1.0	0.5-2.0	5.9	0.7	0.4-1.5
Hispanic/U.S.-born	6.3	0.9	0.5-1.8	9.7	1.3	0.7-2.3
Hispanic/foreign-born	11.5	1.6	0.8-3.5	10.4	1.2	0.6-2.7
Nativity and language						
U.S.-born/English at home	6.9	1		9.3	1	
U.S.-born/no English at home	5.3	0.8	0.4-1.8	7.7	0.9	0.5-1.8
Foreign-born/English at home	9.5	1.4	0.6-3.1	10.6	1.3	0.6-2.8
Foreign-born/no English at home	8.3	1.3	0.7-2.4	6.1	0.6	0.3-1.3
Nativity and discrimination						
U.S.-born/no discrimination	5.9	1		8.0	1	
Foreign-born/no discrimination	9.5	1.8	0.9-3.4	6.6	0.8	0.4-1.7
U.S. born/discrimination	14.5	3.1	1.6-5.9	15.4	2.1	1.2-3.8
Foreign-born/discrimination	8.5	1.5	0.7-3.4	9.4	1.2	0.6-2.6
Depressive mood (yes)	13.8	4.0	2.4-6.7	15.0	4.1	2.5-6.9
Used any substance (including alcohol)	13.0	3.2	1.9-5.2	11.9	1.8	1.1-2.8
Reported any violence (punch/attack/gun)	15.0	3.3	2.0-5.4	16.0	2.8	1.7-4.5

^a Odds ratio (OR) from conditional logistic regression.

TABLE 4

Associations of Immigration with 12-month Deliberate Self-Injury and Suicidal Ideation, Adjusted by Demographics, Depressive Mood, Substance Use, and Violence Acts in the 2006 Boston Youth Survey

	<u>Deliberate self-injury</u>		<u>Suicidal ideation</u>	
	OR^a	95% CI	OR^a	95% CI
Immigration and time in the United States				
U.S.-born/ 1 U.S.-born parent	1		1	
U.S.-born/foreign-born parents	1.1	0.5–2.3	1.3 ^b	0.7–2.4
Foreign-born/>4 yrs in the United States	1.5	0.4–6.4		—
Foreign-born/ 4 yrs in the United States	1.5	0.7–3.5	1.4	0.7–3.0
Immigration and ethnicity identification				
Non-Hispanic/U.S.-born	1		1	
Non-Hispanic/foreign-born	1.1	0.5–2.8	0.8	0.3–2.0
Hispanic/U.S.-born	0.8	0.4–1.9	1.3	0.6–2.8
Hispanic/foreign-born	1.8	0.7–4.7	1.8	0.7–4.8
Immigration/language				
U.S.-born/English at home	1		1	
U.S.-born/no English at home	1.1	0.5–2.6	0.8	0.4–1.8
Foreign-born/English at home	2.1	0.7–6.0	2.1	0.8–5.4
Foreign-born/no English at home	1.5	0.6–3.5	0.6	0.2–1.6
Immigration/discrimination				
U.S.-born/no discrimination	1		1	
Foreign-born/no discrimination	2.1	0.9–5.0	1.1	0.4–2.6
U.S.-born/discrimination	3.2	1.5–6.9	2.3	1.1–4.6
Foreign-born/discrimination	1.6	0.6–4.5	1.5	0.6–3.9

^aOdds ratio (OR) from multiple conditional logistic regression controlling for sociodemographic variables and depressive mood, substance use, and reporting violence.

^bModel did not converge.