Published in final edited form as:
J Am Acad Child Adolesc Psychiatry. 2009 March ; 48(3): 271–282. doi:10.1097/CHI.0b013e318195bccf.

12-Month and Lifetime Prevalence of Suicide Attempts Among Black Adolescents in the National Survey of American Life

Sean Joe, Ph.D., L.M.S.W., **Raymond S. Baser, M.S.**, **Harold W. Neighbors, Ph.D.**, **Cleopatra H. Caldwell, Ph. D.**, and **James S. Jackson, Ph. D.**
Dr. Joe is with the School of Social Work, University of Michigan, Dr. Baser is with the Institute for Social Research, and Drs. Neighbors, Caldwell, and Jackson are with the Department of Health Behavior and Health Education, School of Public Health, University of Michigan.

Abstract

Objective—Provide nationally representative data on the prevalence and psychiatric correlates of suicidal ideation and attempts among African American and Caribbean black adolescents in the United States.

Method—Data on nonfatal suicidal behavior among 1,170 African American and Caribbean black adolescents aged 13 to 17 years are from the National Survey of American Life-Adolescent, a nationally representative household survey of adults with an attached adolescent sample conducted between February 2001 and June 2003.

Results—Nationwide black adolescents reported having a lifetime prevalence of 7.5% for suicidal ideation and 2.7% for attempts. The 12-month prevalence of suicidal ideation and attempt was 3.2% and 1.4%, respectively. Among all respondents, 4% of black American adolescents and 7% of female subjects were projected to attempt suicide by age 17 years. African American adolescents were approximately five times more likely than Caribbean black adolescents to attempt suicide. Almost half of the National Survey of American Life-Adolescent respondents who reported a suicide attempt had never met criteria for any of the *DSM-IV* disorders by the time of their attempts.

Conclusions—Clinicians should be trained to screen for suicidal behavior, even among those without *DSM-IV* disorders, when treating black adolescents, particularly female subjects. In addition, preventive efforts should consider ethnic differences in suicide risk and targeting nonclinical settings.

Keywords

attempted suicide; blacks; psychiatric disorders; risk factors

Suicide is the third leading cause of death among all adolescents in the United States, including black adolescents.[1] In fact, several studies have shown that black male subjects are more likely to commit suicide before age 35 years than are white male subjects.[2–4] Historically, suicide rates among black adolescents and young adults have been relatively low when compared with whites.[5] However, the gap in the rates of suicide between these two groups narrowed because of a recent increase in suicide among young black Americans.[6–8] The racial differences in suicide rates between white and black male subjects aged 15 to 24 years narrowed from a ratio of 1.83 in 1981 to 1.45 in 2004.[7] Furthermore, from 1980 to 1995, there was a 126% increase

Correspondence to Sean Joe, Ph.D., L.M.S.W., School of Social Work, University of Michigan, 1080 South University Avenue, Ann Arbor, MI 48109-1106; e-mail: sjoe@umich.edu.

Disclosure: The authors report no conflicts of interest.

in the suicide rates for black Americans between the ages of 15 and 19 years.[6,9] During this same period, there was a 233% increase in suicide among black subjects between the ages of 10 and 14 years. Certainly, suicidal behavior has emerged as a crucial health issue for black Americans, particularly among young male subjects.[9–11]

Despite the emerging health issue of suicidal behavior and the availability of annual data on suicide, there remains no single primary data source for nationally representative information on adolescent nonfatal suicidal behavior.[10] Research on nonfatal suicidal behavior is significant because attempted suicide may occur up to 10 to 40 times more frequently than suicide.[10] For instance, annually 30,000 people in the United States die by suicide, yet it is estimated that approximately 650,000 people per year are seen in emergency departments after attempting suicide.[10]

Across all racial and sex groups, a previous suicide attempt constitutes an important and clinically relevant risk factor for future suicide.[12–14] Reports from the Institute of Medicine, the National Strategy for Suicide Prevention, and the President's New Freedom Commission have highlighted the need for nationally representative epidemiological data on the occurrence of suicidal thoughts and attempts.[10,11,15] Suicide attempts and other self-injurious behaviors among children and adolescents are important public health concerns as they result in an annual estimated 124,409 related emergency department visits in U.S. hospitals.[16] However, despite existing data, there continues to be a lack of national prevalence estimates of adolescent nonfatal suicidal behavior, particularly for ethnic minorities.[10,17] Adding to the limited knowledge about psychiatric correlates of suicidal behavior among black Americans is the sparse information about psychopathology for ethnic minority adolescents. Incomplete information regarding psychiatric correlates of suicidal behavior has a negative impact on understanding both the distinctive role ethnicity may play in the etiology and expression of nonfatal suicidal behavior and protective factors that may prevent adolescent psychopathology among black Americans. Psychopathology prevalence estimates among ethnically diverse adolescents not only are important in regard to identification of potential suicidal behavior but also may offer some insight into addressing this group's limited access to mental health services.[18] Therefore, prevalence estimates of psychopathology for ethnically diverse groups of adolescents would be an appropriate first step toward developing empirically and public health-based prevention and mental health services aimed at reducing suicide risk.

Current sources also lack nationally representative data on ethnic differences (including immigration status) among black American adolescents for 12-month or lifetime prevalence of suicidal thoughts or behaviors. A recent nationally representative study of suicidal behavior among black American adults reported that the suicide risk for this population varies by ethnicity.[3] In fact, Caribbean black (CB) male adults reported a 7.5% prevalence rate, the highest rate of attempted suicide for the U.S. black population, whereas reported attempt rates for the general black population and African American (AA) male subjects were 4.1% and 2.7%, respectively. Given that the foreign-born share of the black American population rose from 1% to 8% between 1960 and 2005 and immigration contributed 20% of the growth of the U.S. black population between 2000 and 2006,[19] it is important to examine the impact of ethnicity on the patterns of suicidal behavior among black Americans if we are to develop effective intervention strategies.

This study presents data on the prevalence and psychiatric correlates of nonfatal suicidal behavior among black adolescents between the ages of 13 and 17 years in the United States, by ethnicity. Data for this report comes from the 2001–2003 National Survey of American Life (NSAL).[20] Generating more reliable and extensive scientific population-specific data on nonfatal suicidal behaviors is a critical step toward developing and testing preventive interventions aimed at reducing suicide morbidity and mortality. The lack of reliable data on

the national prevalence estimates and correlates of black adolescent suicidal behavior hampers intervention development and the ability to monitor the effectiveness of suicide prevention strategies aimed at reducing the risk for suicide for this population.

METHOD

Participants

The participants were AA and CB youths who participated in the NSAL. The NSAL is part of the National Institute of Mental Health (NIMH) Collaborative Psychiatric Epidemiology Surveys initiative that includes three nationally representative surveys—the NSAL, the National Comorbidity Survey Replication, and the National Latino and Asian American Study.[21] The NSAL is a nationally representative household survey of 3,570 AAs and 1,621 blacks of Caribbean descent (CBs) aged 18 years and older.[20] In this study, *African American* is used to describe people who self-identified as black but did not identify ancestral ties to the Caribbean. *Caribbean blacks* are people who self-identified as black and indicated that they were from a country included on a list of Caribbean area countries presented by the interviewers or specified that at least one of their parents or grandparents was born in a Caribbean area country. The terms *black* and *black Americans* are inclusive of both groups. The NSAL sample weights for the AA and CB samples were designed to provide representative population estimates in the 48 coterminous states. The study received institutional review board approval from the University of Michigan and was administered by the staff of the Survey Research Center at the University of Michigan. Data were collected from February 2001 to June 2003.

To create the NSAL/Adolescent sample (NSAL-A), every household that included an adult participant in the NSAL was screened for an eligible adolescent living in the household, and adolescents were selected using a random selection procedure. If more than one adolescent was eligible for the study, up to two adolescents were selected based on the sex of the first selected adolescent. The NSAL-A was weighted to adjust for variation in probabilities of selection within households, non-response rates for households, and nonresponse rates for people. The weighted data were poststratified to approximate the national population distributions for sex (male and female subjects) and age (13, 14, 15, 16, and 17 years) subgroups among black youth. Before the interview, informed consent was obtained from the adolescent's legal guardian and adolescent. Most of the adolescent interviews were conducted face-to-face using a computer-assisted instrument in their homes, and approximately 18% were conducted either entirely or partially by telephone. The interviewers were trained at the Survey Research Center at the Institute for Social Research at the University of Michigan, and they went through four interviewer training sessions over the course of 14 months. The AA interviews averaged 1 hour 40 minutes in length, and Caribbean adolescent interviews averaged 1 hour 50 minutes. Respondents were paid $50 for their participation in the study; the overall response rate was 80.6% (80.4% for AAs and 83.5% for CBs).

The original adolescent sample consisted of 1,193 cases, but 23 were dropped for analyses because they were 18 or 19 years old at the time of the interview. Thus, the resulting analysis sample consists of 1,170 AA (n = 810) and CB (n = 360) youths ranging in age from 13 to 17 years, who were attached to the adult households. The overall sample is composed of male subjects (n = 562 unweighted, 50% weighted) and female subjects (n = 608 unweighted, 50% weighted), and there is an equal sex distribution for AA and CB youth. The mean age is 15 years (SD 1.42 years), and the age groups were categorized into early (aged 13–14 years; n = 477 [40%]), middle (aged 15–16 years; n = 441 [41%]), and late (aged 17 years; n = 252 [19%]). Approximately, 96% of the sample was still enrolled in high school. The median family income was $28,000 (approximately $26,000 for AAs and $32,250 for CBs).

Measures

Demographic Questionnaire—All adolescents responded to questions requesting information about their age and family income (based on adult respondent). Adolescent ethnicity and sex were assessed with standard questions as part of the randomized respondent selection process used in the household sampling procedure for the study. Thus, our sample is not self-identified but identified through the sampling screening procedure for study eligibility. Ethnicity was coded to differentiate AAs from CBs. Urbanicity was coded to differentiate survey participants living in a census-defined major metropolitan area from those residing in other census-defined urban and nonurban areas.

Composite International Diagnostic Interview—Participants completed a diagnostic assessment using a modified adaptation of the World Health Organization Composite International Diagnostic Interview (CIDI).[22] This is a lay-administered fully structured diagnostic interview that generates classifications of psychiatric disorders as defined by the *DSM-IV* and the *International Statistical Classification of Diseases, 10th Revision*.[23] Previous studies have found the CIDI to have good psychometric properties with youths as young as 15 years old,[23] and the instrument was modified from the original version to accommodate youths aged 13 years or older for the NSAL.[24] The present study investigates the increased risk associated with the onset of the *DSM-IV* mental disorders assessed by the CIDI. The age of onset of each disorder was determined using a series of questions designed to enhance respondent recall.[25,26] If respondents could not remember their exact age when they first had the syndrome, the follow-up questions attempted to elicit a plausible estimate of their age of onset.

Suicidal ideation in respondents was also assessed with the CIDI and defined based on whether they ever seriously thought about killing themselves and, if so, whether they had these thoughts in the past 12 months. Participants who reported suicidal ideation were then asked whether they ever made a plan for committing suicide and, if so, whether they made such a plan in the past 12 months. Regardless of the answer to the question about a plan, respondents who reported suicidal ideation were then asked whether they ever attempted suicide and, if so, whether they made this attempt in the past 12 months. For each of these outcomes, information was obtained about age at the first occurrence and how recent it was. Participants who reported making a 12-month attempt were then asked to describe the intent of the attempt by indicating which of the following three statements best described their attempt: “I made a serious attempt to kill myself, and it was only luck that I did not succeed.” “I tried to kill myself, but knew the method was not foolproof.” “My attempt was a cry for help. I did not intend to die.”

Statistical Analysis

All analyses were conducted on the weighted nationally representative population data. Procedures were used in all of the analyses to properly adjust standard errors (SEs), confidence intervals, and significance tests for the complex sample design of the NSAL. Cross-tabulations were conducted using the PROC SURVEYFREQ procedure of the SAS Version 9.1.3 software package[27] to calculate the prevalence of suicidal ideation and attempts in the 12 months before the interview and the prevalence of respondents with a lifetime history of these behaviors up to their ages at the time they were interviewed. This SAS procedure uses the Taylor series linearization technique for calculating the complex design-based estimates of variance and SE. The χ^2 and corresponding p values from these cross-tabulations are based on the Rao-Scott χ^2 test, a complex design-adjusted version of the Pearson χ^2 test.[27]

Survival analysis methods were used to derive the projected risk by age 17 years of experiencing suicidal ideation and of making a suicide attempt, as well as to assess potential sociodemographic and psychiatric risk factors for these behaviors. Specifically, the cumulative

probabilities of experiencing these behaviors were derived from Kaplan-Meier curves[25] by subtracting the values of each point on the curves from 1.00, whereas multivariate Cox proportional hazards regression was used to assess the associations of the sociodemographic and psychiatric factors with onset of the suicidal outcomes.[28] The individual psychiatric disorder variables, as well as the summary disorder variables (e.g., "any mood disorder"), were entered into the Cox proportional hazards regression models as time-varying covariates. In this context, a respondent was counted as having a given disorder only if the reported age of onset of the disorder was before or identical to either the reported age of the suicidal outcome in question (for those respondents who experienced the outcome) or the age at interview (for those respondents who were censored, i.e., who had not experienced the outcome as of the date of their interview). This analysis and coding method allow for more accurate modeling of each respondent's psychiatric disorder status with respect to the timing of suicidal behavior.

All survival analyses were conducted in R, an open-source statistical programming language and environment,[29] using the survey" package to properly adjust SEs and significance tests for the effects of the weighting,[30,31] stratification, and clustering of the NSAL sample design. Analyses conducted in R used the Taylor series linearization technique for calculating the complex design-based estimates of variance and SE. The coefficients of the Cox proportional hazards models and their 95% confidence intervals were exponentiated and are reported as risk ratios for ease of interpretation. The categorical factors in the Cox proportional hazards models were tested for overall statistical significance with Wald χ^2 tests using the complex design-adjusted variance-covariance matrix of the coefficients.

RESULTS

Descriptive information for the sample is presented in Table 1. The AA and CB adolescents did not differ significantly in socioeconomic characteristics (e.g., household income, age), except for region, work status, and nativity. As expected, more CB adolescents (77.6%, SE 1.9) are from households in which the adults were born outside the United States. The median age is 15 years, and the 25th and 75th percentile ages are 14 and 16 years, respectively. A majority of black youths are growing up primarily in the south (61.8%, SE 1.9), in contrast to the Caribbean adolescents, concentrated in the northeast (63.9%, SE 2.7) and south (32.4%, SE 2.1).

Prevalence

The overall 12-month prevalences of attempts and suicidal ideation were 1.4% (SE 0.3%) and 3.2% (SE 0.6%), respectively (Table 2). The 12-month prevalence of suicide attempt among female subjects was 2.1% (SE 0.4%), whereas 0.8% (SE 0.4%) of male subjects attempted suicide in the 12 months before the interview. The difference between these two prevalences was marginally significant ($\chi^2_1 = 3.45$, $p = .07$). No significant differences in the 12-month prevalence of attempts were found between the AA and the CB adolescents or by age groups. However, an ethnicity-by-sex analysis in 12-month attempts revealed that the AA female subjects (4.1%) and the CB female subjects (2.1%) reported significantly higher rates than male counterparts (1.7% and 0.5%, respectively). Similarly, the female subjects (CB 4.8% and AA 4.5%) reported higher 12-month rates of suicidal ideation than the male subjects (CB 0.3% and AA 2.1%).

The overall lifetime prevalences of attempts and suicidal ideation, 2.7% (0.5%) and 7.5% (0.9%), respectively, were roughly double those of the corresponding 12-month figures. The prevalence of lifetime attempts among the AAs (2.8%) was marginally higher ($p < .10$) than the prevalence among the CBs (1.4%). Among the female subjects, the prevalences of both lifetime ideation (9.4%) and attempts (3.9%) were significantly higher than the corresponding figures for male subjects (ideation 5.6%, attempt 1.5%). Although the CB adolescents reported

more suicidal ideation than the AA adolescents, this difference was not significant. An ethnicity-by-sex analysis in the lifetime prevalence in suicidal ideation reveals that the Caribbean female subjects (14.4%) and the AA female subjects (4.1%) reported the higher rates of suicidal ideation than their male counterparts (0.5% and 1.5%, respectively).

Among attempters, 67.8% attempted only once, 21.7% made two attempts, 10.5% attempted suicide three or more times. Attempters were asked to describe the nature of their intent. Among the attempters, 33.4% endorsed the item "I made a serious attempt to kill myself and it was only luck that I did not succeed." Another 22.1% of attempters endorsed, "I tried to kill myself, but knew that the method was not foolproof," whereas 44.6% endorsed, "My attempt was a cry for help. I did not intend to die."

Projected Risk for Suicide Attempt by Age 17 years

The lifetime prevalence estimates do not account for the fact that respondents could be of different ages at the time they were interviewed (i.e., they do not account for censoring) and thus likely represent underestimates of the actual risk for suicide attempt during the adolescent period. To address this problem, the projected risks by age 17 years for the two suicidal outcomes were estimated using survival analysis methods. All of these projected risk estimates (Table 2) are higher than their corresponding lifetime prevalence estimates. The most notable finding is that 4% of the black American adolescents and more than 7% of the female subjects were projected to actually attempt suicide by the time they emerge from adolescence.

Sociodemographic Risk Factors for Suicidal Ideation and Attempt

Table 3 presents the results of multivariate Cox proportional hazards models predicting first suicide attempt and initial onset of suicidal ideation. Predictors included sociodemographic variables as well as five time-varying variables indexing the onset of *DSM-IV* disorders falling in any of the five classes of disorders assessed by the CIDI.

Ethnicity was a significant risk factor for attempting suicide but not for developing suicidal ideation. The AAs were 4.55 times more likely than the CBs to attempt suicide. The female subjects were almost three times more likely than the male subjects to attempt suicide. The female subjects were also more likely than the male subjects to report suicidal ideation; however, this effect was only marginally statistically significant ($p = .06$). Age was not a significant predictor of either attempts or ideation. Region and annual family income factors were both associated with suicide attempts but not ideation. Living in the south and the west regions of the United States seemed to be protective with respect to suicide attempts compared with living in the northeast. Although not statistically significant, the adolescents living in households with an annual family income between $18,000 and $31,999 were least likely to report having attempted suicide, and those living in households with incomes between $32,000 and $54,999 were most likely to report having attempted suicide.

Psychiatric Risk Factors for Suicidal Ideation and Attempt

Controlling for all of the sociodemographic variables, as well as for the onset of a disorder in any of the other four *DSM-IV* disorder classes, only prior or concurrent onset of an anxiety disorder was related to attempting suicide (Table 3). Specifically, adolescents who had developed a *DSM-IV* anxiety disorder were 2.99 (95% confidence interval [CI] 1.43–6.28) times more likely to subsequently attempt suicide than those who had not developed an anxiety disorder. With respect to developing suicidal ideation, the adolescents who had developed an anxiety disorder were 3.02 (95% CI 1.73–5.26) times more likely to experience suicidal ideation than those who had not, whereas those who had developed a substance disorder were 3.20 (95% CI 1.01–10.26) times more likely to experience suicidal ideation.

Table 4 presents the results from models intended to investigate in finer detail the risk for suicide attempt associated with *DSM-IV* psychiatric disorders. When controlling for only the sociodemographic variables in Table 3, most of the individual disorders were associated with significantly increased risk for developing suicidal ideation. Exceptions were the bipolar disorders, agoraphobia without panic disorder, and bulimia nervosa. In addition, the risk for developing suicidal ideation increased with the number of comorbid disorders. Most of these individual associations, however, diminished in models that additionally controlled both for other individual disorders within the same *DSM-IV* disorder class as the focal disorder and for all four of the other disorder class summary variables. Only panic disorder, social anxiety disorder, alcohol abuse, and binge-eating disorder were associated with suicidal ideation in these models that controlled for the other disorders.

Controlling for sociodemographic factors, many of the individual mood or anxiety disorders significantly increased the risk for making a suicide attempt. Dysthymia and generalized anxiety disorder showed the largest effects, respectively increasing the odds of making a suicide attempt by factors of 10.15 (95% CI 3.39–30.39) and 9.65 (95% CI 3.11–29.94). Respondents with major depressive disorder were 5.72 (95% CI 1.31–24.70) times more likely to report having attempted suicide than those without, whereas those with social anxiety disorder or agoraphobia were 4.21 (95% CI 1.74–10.18) and 3.99 (95% CI 1.12–14.24) times more likely, respectively, to attempt suicide than those without. However, when additionally controlling for the other individual disorders within the same *DSM-IV* disorder class as a given individual disorder, as well as for the other four disorder classes, only social anxiety disorder remained associated with suicide attempt. Specifically, the onset of social anxiety disorder is associated with an increased risk for suicide attempt by 2.79 (95% CI 1.38–5.62) times when controlling for the other disorders.

In addition, the results from the model with only sociodemographic controls indicate that adolescents with three or more comorbid disorders were 7.21 (95% CI 2.72–19.11) times more likely to report having attempted suicide than those with no disorder (Table 4). This group was also significantly ($p < .01$) more likely to make a suicide attempt than respondents with only one psychiatric disorder. It is important to note, however, that almost half (47.3%, SE 8.2) of the respondents who made a suicide attempt had never met criteria for any of the *DSM-IV* disorders by the time of their attempts. Similarly, 41.3% (SE 4.1%) of ideators had not met criteria for any of the disorders by the time they developed suicidal ideation.

DISCUSSION

We provide for the first time national estimates of the 12-month and lifetime prevalence of suicidal ideation and attempts among 13- to 17-year-old black adolescents in the United States, as well as important ethnic differences in suicidal behavior among this population. The results from the NSAL-A are consistent with the results from previous clinical and school-based research on adolescent suicidal ideation and suicide attempts,[6,16,32,33] namely, the black adolescent female subjects reported substantially higher lifetime and 12-month prevalence rates of suicidal ideation and attempts than the male subjects. Noteworthy, the Caribbean female subjects reported the highest lifetime and 12-month estimates in suicidal ideation. In contrast to findings among black adults,[3] the CB adolescent male subjects reported the lowest prevalence rates for suicidal ideation and attempts. Further investigation is warranted that explores what accounts for the shift in the burden of risk from a higher reported rate of nonfatal suicidal behavior among the CB female subjects during adolescence to a higher suicide risk among the CB male subjects during adulthood.

The sex-specific prevalence rates of suicide attempts for the NSAL-A is comparable to that found in the school-based Add Health Study of 7th to 12th graders, which found that 1.6% of

black male subjects and 3.6% of black female subjects reported attempted suicides.[6] Conversely, the 7.5% estimated lifetime prevalence of suicidal ideation and 2.7% attempts for this study are below previous clinical and school-based reports for older black adolescents. For instance, the NSAL-A estimates are below the national estimates of 12.5% and 8.4% for suicidal ideation and attempts, respectively, reported for black high school students in the Youth Risk Behavior Survey (YRBS).[34,35] The reason why the NSAL-A yielded lower estimates than the YRBS but was similar to the Add Health Study could be due to fact the YRBS only included older adolescents in the sample, a group that tend to report more suicidal behavior than younger adolescents. In contrast, both the NSAL-A and Add Health Study sample included adolescents younger than 14 years. The reported 1.3% lifetime prevalence of attempted suicide for CB adolescents is considerably lower than the rate reported in an earlier study on health risk behaviors among CB adolescents. Blum and coworkers[36] reported a lifetime prevalence rate of 12% for suicide attempts in a probability sample of adolescents between the ages of 10 and 18 years from nine Caribbean countries. Similar to the YRBS, the sample included older adolescent respondents, and there were still living in Caribbean countries. Future research should discern whether selection bias (e.g., higher parental education), the quality of services afforded CBs in the United States, or environmental stressors related to greater amounts of unmet need among the adolescents living in the Caribbean accounts for the notable difference in the suicide attempt rates between the two samples. Nonetheless, the NSAL-A findings are important, particularly because they illustrate the importance of seeking more understanding of ethnic, cultural, and psychosocial versus racial differences in suicide risk. The study also highlights the burden of nonfatal suicidal behavior among black American adolescents in that approximately 4% of this population will have attempted suicide by the time they turn 17 years old.

Consistent with research on other populations, psychiatric disorders, such as anxiety disorders, and comorbid psychiatric disorders[37,38] were significant predictors of attempted suicide among black adolescents. Black adolescents with at least three psychiatric disorders were roughly seven times more likely to report having attempted suicide. When examining types of psychiatric disorders, those with anxiety disorders were at highest risk for attempted suicide. The finding that social phobia or having any anxiety disorders was related to suicide attempts among this population further substantiates earlier finding of a strong relation between anxiety and suicidal behavior.[10] The dose-response relation between the number of psychiatric disorders and attempted suicide is consistent with other cross-sectional studies and community epidemiological surveys. [39] The finding that, among individual disorders, dysthymia is the strongest predictor compared with other mental or substance abuse predictors is consistent with other studies that have found that mood disorders are often the strongest psychiatric risk factor for suicidal behavior.[40] A history of psychopathology is certainly associated with adolescent nonfatal suicide behavior,[41] but the finding that approximately half of the black adolescents in the NSAL-A sample did not have or were never diagnosed with a *DSM-IV* disorder by the time the attempted suicide is cause for concern. This finding is consistent with previous research with foreign, including Hispanic adolescent, samples, which reveal that 18% to 95% of adolescents who attempted suicide either did not have a history of psychiatric disorders or met criteria for psychiatric disorders.[42,43] Future research must clarify whether the black adolescents who attempt suicide did so because they were never properly diagnosed, had less access to mental health care, or tend to engage in self-injurious behavior irrespective of the onset of psychiatric disorders.

It is also important to highlight the findings related to socioeconomic status and region. The finding that the black adolescents in the south have a reduced risk for attempting suicide is consistent with research suggesting that southern residence is a protective factor for this population.[4] Our nonsignificant results on individual income categories contradict previous findings that a positive relation exists between income and suicidal behavior among black

youth.[44–46] The status-integration hypothesis contends that a positive relation exists between higher socioeconomic status and suicide risk among black Americans.[47–50] We find no evidence to support the status-integration hypothesis for black adolescents. Further research is needed to clarify the relative importance of income, education, and other socioeconomic indicators when examining racial differences in the etiology of suicidal behaviors.

The results reported here are limited by the fact that the NSAL-A is cross-sectional and the information is based on retrospective reports. Thus, the prevalences are likely to be lower-bound estimates.[39] In addition, no reliability or validity data were obtained on the measures of ideation, plan, and attempts, or lethality. The results are also limited by the fact that we do not know the extent to which cultural factors affected the willingness of our respondents to either admit or recall the presence of symptoms or suicidal thoughts and behaviors. The results may also be affected by recall bias associated with the respondents' age and mental health status. Previous research suggests that some *DSM-IV* diagnoses may be overestimated using lay-administered interviewing, particularly nonaffective psychoses,[51,52] but studies have found that estimates of prevalence using the World Mental Health CIDI are generally conservative.[53] Also, the temporal order of suicidal behavior could not necessarily be distinguished when onset of psychiatric disorders and suicidal behavior occurred in the same 12-month age period. Finally, our sample of CBs includes immigrants who have had varying lengths of stay in the United States, as well as people of Caribbean ancestry who were born in the United States and have no strong knowledge of or identification with Caribbean culture. Despite these constraints, the effect of most of the limitations previously noted is to make our estimates more conservative than may otherwise be the case. In view of current gaps in our under-standing of the risk for suicidal behavior among blacks, these constraints seem acceptable in light of information concerning the prevalence and correlates of suicide risk in this large and diverse sample of black Americans.

In summary, nationally representative data are presented for the first time on the *DSM-IV* psychiatric predictors of suicidal behavior among younger (13–4 years old) and older (15–17 years old) black adolescents. The NSAL-A also provides the first nationally representative general population data on ethnic differences in lifetime suicidal ideation and attempts among black adolescents. Before this study, relatively little was known about the prevalence of nonfatal suicidal behavior of black adolescents of Caribbean heritage residing in the United States. This unique psychiatric epidemiological study illustrates the need for further empirical research and monitoring of ethnic-specific trends in nonfatal suicidal behavior among black American adolescents, particularly for AAs and CB adolescent female subjects. The findings of this study suggests that, in both clinical and nonclinical settings, preventive efforts should include screening black adolescents, particularly those with anxiety disorders (e.g., social phobia) or no known psychiatric disorders, for suicidal thoughts and behaviors. It is also critical to consider the public health implications of the finding that only 50% of the black adolescents who attempt suicide reported ever receiving a previous *DSM* psychiatric disorder diagnosis by the time of the reported attempt. For instance, community-based efforts to increase black adolescent access to mental health care may be warranted, given ethnic minority adolescents' lower access to and use of mental health services.[18] Earlier research suggests that nonfatal suicidal behavior should be taken seriously even in the absence of clear psychopathology. Future research is needed that can explain how the effects of ethnicity on black suicide risk over the life course is moderated by sex. Research is also needed to identify the nonpsychiatric risk factors that may be unique to black American adolescents' engagement in nonfatal suicidal behavior, given their low reporting of previous psychopathology. Information gained from such studies can further national efforts to develop suicide prevention interventions for this population.

Acknowledgments

The National Survey of American Life (NSAL) is supported by the National Institute of Mental Health (NIMH; U01-MH57716) with supplemental support from the OBSSR Office of Behavioral and Social Science Research and the National Institute on Drug Abuse at the National Institutes of Health (NIH) and the University of Michigan. Dr. Joe was supported by a grant (K01-MH65499) from the National Institute of Mental Health. Dr. Neighbors was supported by the Health Policy Scholars Award from the Robert Wood Johnson Foundation.

The authors thank the Program for Research on Black Americans faculty, and the PRBA research staff, including Myriam Torres, M.S., Nakesha Faison, M.S., Jamie Abelson, M.S.W., M.S., Deborah Coral, B.A., Jane Rafferty, M.A., and Phyllis Stillman, B.A., for the assistance provided in all aspects of the NSAL study. The authors also thank the staff at the Survey Research Center's Survey Research Operations department for their assistance with instrumentation and fieldwork for the NSAL study. The authors also thank Ronald C. Kessler for development in the National Comorbidity Survey Replication of the diagnostic algorithms used in this study.

This article is the subject of an editorial by Dr. Matthew K. Nock in this issue.

REFERENCES

1. Kochanek, KD.; Murphy, SL.; Anderson, RN.; Scott, C. Deaths: Final Data for 2002. Hyattsville: National Center for Health Statistics; 2004.
2. Garlow SJ, Purselle D, Heninger M. Ethnic differences in patterns of suicide across the life cycle. Am J Psychiatry 2005;162:319–323. [PubMed: 15677597]
3. Joe S, Baser R, Breeden G, Neighbors HW, Jackson J. Prevalence of and risk factors of lifetime suicide attempts among Blacks in the United States. JAMA 2006;296(17):2112–2123. [PubMed: 17077376]
4. Willis LA, Coombs DW, Drentea P, Cockerham WC. Uncovering the mystery: factors of African American suicide. Suicide Life Threat Behav 2003;33(4):412–429. [PubMed: 14695056]
5. O'Donnell L, O'Donnell C, Wardlaw DM, Stueve A. Risk and resiliency factors influencing suicidality among urban African American and Latino youth. Am J Community Psychol 2004;33:37–49. [PubMed: 15055753]
6. Borowsky IW, Ireland M, Resnick MD. Adolescent suicide attempts: risk and protectors. Pediatrics 2001;107(3):485–493. [PubMed: 11230587]
7. Joe, S. Suicide patterns among black males. In: Anderson, E., editor. Against the Wall: Poor, Young, Black, & Male. Philadelphia: University of Pennsylvania Press; 2008. p. 218-241.
8. Price JH, Thompson AJ, Dake JA. Factors associated with state variations in homicide, suicide, and unintentional firearm deaths. J Health Commun 2004;29(4):271–283.
9. Centers for Disease Control and Prevention. Suicide among African-American youths—United States, 1980–1995. MMWR Morb Mortal Wkly Rep 1998;47:193–196. [PubMed: 9531022]
10. Goldsmith, SK.; Pellmar, TC.; Kleinman, AM.; Bunney, WE. Reducing Suicide: A National Imperative. Washington: Institute of Medicine, National Academies Press; 2002.
11. U. S. Public Health Service. The Surgeon General's Call to Action to Prevent Suicide, 1999. Washington: U. S. Public Health Service; 2000.
12. Norstrom T. The impact of alcohol, divorce, and unemployment on suicide—a multilevel analysis. Soc Forces 1995;74(1):293–314.
13. Joiner T, Conwell Y, Fitzpatrick K, et al. Four studies on how current and past suicidality relate even when "everything but the kitchen sink" is covaried. J Abnorm Psychol 2005;114(2):291–303. [PubMed: 15869359]
14. Shaffer D, Gould MS, Fisher P, et al. Psychiatric diagnosis in child and adolescent suicide. Arch Gen Psychiatry 1996;53(4):339–348. [PubMed: 8634012]
15. U. S. Public Health Service. National Strategy for Suicide Prevention: Goals and Objectives for Action. Rockville: U. S. Department of Health and Human Services; 2001.
16. Grunbaum, JA.; Kann, L.; Kinchen, S., et al. Youth Risk Behavior Surveillance–United States, 2003. Vol. 53. Atlanta: Centers for Disease Control and Prevention; 2004.
17. Phillips DP, Ruth TE. Adequacy of official suicide statistics for scientific research and public policy. Suicide Life Threat Behav 1993;23:307–319. [PubMed: 8310465]

18. U. S. Public Health Service. Mental Health: Culture, Race, And Ethnicity—A Supplement to Mental Health: A Report of the Surgeon General. Rockville: U.S. Department of Health and Human Services; 2001.
19. Kent MM. Immigration and America's Black population: Population Reference Bureau. 2007
20. Jackson JS, Torres M, Caldwell CH, et al. The National Survey of American Life: a study of racial, ethnic and cultural influences on mental disorders and mental health. Int J Methods Psychiatr Res 2004;13:196–207. [PubMed: 15719528]
21. Pennell B-E, Bowers A, Carr D. The development and implementation of the National Comorbidity Survey Replication, the National Survey of American Life, and the National Latino and Asian American Survey. Int J Methods Psychiatr Res 2004;13(4):241–269. [PubMed: 15719531]
22. Kessler RC, Wittchen H-U, Abelson JM, et al. Methodological studies of the Composite International Diagnostic Interview (CIDI) in the US National Comorbidity Survey. Int J Methods Psychiatr Res 1998;7(1):33–55.
23. Andrews G, Peters L. The psychometric properties of the Composite International Diagnostic Interview. Soc Psychiatry Psychiatr Epidemiol 1998;33:80–88. [PubMed: 9503991]
24. Caldwell, CH.; Jackson, JS.; Seaton, EK. Mental disorders and psychological well-being among black youth: findings from the National Survey of American Life. Paper presented at the annual meeting of the Society for Research on Adolescence; San Francisco. 2006 Mar 23.
25. Kaplan EL, Meier P. Nonparametric estimation form incomplete observations. J Am Stat Assoc 1958;53:457–481.
26. Simon GE, VonKorff M. Recall of psychiatric history in cross-sectional surveys: implications for epidemiologic research. Epidemiol Rev 1995;17(1):221–227. [PubMed: 8521941]
27. SAS Institute. SAS/STAT User's Guide, Version 9.1. Cary: SAS Institute; 2005.
28. Hosmer, DW.; Lemeshow, S. Applied Survival Analysis: Regression Modeling of Time to Event Data. New York: John Wiley & Sons; 2000.
29. R Core Development Team. R: A Language and Environment for Statistical Computing. Vienna: R Foundation for Statistical Computing; 2006.
30. Lumley T. Analysis of complex survey samples. J Stat Softw 2004;9:8.
31. Lumley T, Janes H, Sheppard L. Correspondence: Cox models for ecologic time series data? Environ Health Perspect 2006;114(12):A690–A691. [PubMed: 17185253]
32. Cutright P, Fernquist RM. The relative gender gap in suicide: societal integration, the culture of suicide, and period effects in 20 developed countries, 1955–1994. Soc Sci Res 2001;30(1):76–99.
33. Grunbaum, JA.; Kann, L.; Kinchen, SA., et al. Youth Risk Behavior Surveillance–United States, 2001. Vol. 51. Atlanta: Centers for Disease Control and Prevention; 2002.
34. Centers for Disease Control and Prevention. Youth Risk Behavior Surveillance. [Accessed June to December, 2004]. (Online) http://www.cdc.gov/HealthyYouth/YRBS/data/index.htm#FILE
35. Eaton, DK.; Kann, L.; Kinchen, S., et al. Youth Risk Behavior Surveillance–United States, 2005. Vol. 55. Atlanta: Centers for Disease Control and Prevention; 2006. p. SS-5.
36. Blum RW, Halcon L, Beuhring T, Pate E, Campell-Forrester S, Venema A. Adolescent health in the Caribbean: risk and protective factors. Am J Public Health 2003;93(3):456–460. [PubMed: 12604495]
37. Shaffer D, Gould M, Fisher P, et al. Psychiatric diagnosis in child and adolescent suicide. Arch Gen Psychiatry 1996;53(4):339–348. [PubMed: 8634012]
38. Ialongo N, McCreary BK, Pearson JL, et al. Suicidal behavior among urban, African American young adults. Suicide Life Threat Behav 2002;32(2):256–271. [PubMed: 12374472]
39. Kessler RC, Borges G, Walters EE. Prevalence of risk factors for life-time suicide attempts in the National Comorbidity Survey. Arch Gen Psychiatry 1999;56:617–626. [PubMed: 10401507]
40. Harris EC, Barraclough B. Suicide as an outcome for mental disorders: a meta-analysis. Br J Psychiatry 1997;170:205–228. [PubMed: 9229027]
41. Beautrais AL, Joyce PR, Mulder RT. Prevalence and comorbidity of mental disorders in people making serious suicide attempts: a case-control study. Am J Psychiatry 1996;153(8):1009–1014. [PubMed: 8678168]

42. Kotila L, Lonnqvist J. Suicide and violent death among adolescent suicide attempters. Acta Psychiatr Scand 1989;79:453–459. [PubMed: 2750546]
43. Borges G, Benjet C, Medina-Mora ME, Orozco R, Nock M. Suicide ideation, plan, and attempt in the Mexican adolescent mental health survey. J Am Acad Child Adolesc Psychiatry 2008;47(1):41–52. [PubMed: 18174824]
44. Costello EJ, Compton SN, Keeler G, Angold A. Relationship between poverty and psychopathology: a natural experiment. JAMA 2003;290:2023–2029. [PubMed: 14559956]
45. Lester D. Mortality from suicide and homicide for African Americans in the U. S. A.: a regional analysis. Omega (Westport) 1990;22:219–226.
46. Lester D. Inequality of income and rates of violence in Caucasian and Black groups. Psychol Rep 1996;79:979–998.
47. Prudhomme C. The problem of suicide in the American Negro. Psychoanal Rev 1938;25:187–204. 372–391.
48. Henry, AF.; Short, JF. Suicide and Homicide. Glencoe: Free Press; 1954.
49. Lester D. Economic status of African Americans and suicide rates. Percept Mot Skills 1993;77:1150. [PubMed: 8170762]
50. Maris, RW. Social Forces in Urban Suicide. Homewood: Dorsey; 1969.
51. Regier, DA.; Narrow, WE. Defining clinically significant psychopathology with epidemiologic data. In: Helzer, JE.; Hudiak, JJ., editors. Defining Psychopathology in the 21st Century: DSM-V and Beyond. Washington: American Psychopathological Association; 2002. p. 19-30.
52. Wakefield, J.; Spitzer, R. Why requiring clinical significance does not solve epidemiology's and DSM's validity problem: response to Regier and Narrow. In: Helzer, JE.; Hudiak, JJ., editors. Defining Psychopathology in the 21st Century: DSM-V and Beyond. Washington: American Psychopathological Association; 2002.
53. First, MB.; Spitzer, RL.; Gibbon, M.; Williams, JBW. Structured Clinical Interview for DSM-IV Axis I Disorders, Research Version, Non-Patient Edition (SCID-I/NP). New York: New York Psychiatric Institute; 2002.

TABLE 1

Weighted Distributions of Sociodemographic Characteristics of the National Survey of American Life Adolescent Sample by Ethnicity[a]

Sociodemographic Characteristic	African American *n* = 810	Caribbean Black *n* = 360	Characteristic × Ethnicity χ^2
Age, y			
13–15	60.9 (2.1)	59.1 (4.8)	$\chi^2_1 = 0.44$
16–17	39.1 (2.1)	40.9 (4.8)	$p = .73$
Sex			
Male	50.4 (1.9)	44.8 (2.3)	$\chi^2_1 = 3.59$
Female	49.6 (1.9)	55.2 (2.3)	$p = .06$
Work status			
Employed	14.2 (1.2)	18.7 (1.4)	$\chi^2_1 = 5.97$
Not employed	85.8 (1.2)	81.3 (1.4)	$p = .01$
Grade level			
5th–8th	30.7 (2.7)	20.4 (5.8)	
9th	22.3 (1.7)	24.1 (5.9)	$\chi^2_4 = 5.40$
10th	20.6 (1.5)	22.4 (3.8)	$p = .25$
11th	15.8 (1.1)	16.2 (1.2)	
12th+	10.5 (1.3)	16.9 (4.2)	
Household income[b]			
$0–$17,999	28.0 (2.5)	26.4 (5.2)	
$18,000–$31,999	27.5 (1.8)	20.3 (3.2)	$\chi^2_3 = 2.83$
$32,000–$54,999	24.4 (2.4)	32.8 (4.2)	$p = .42$
≥$55,000	20.1 (2.2)	20.5 (6.7)	
Adult respondent's nativity[b]			
Born in the U.S.	98.3 (0.6)	22.4 (1.9)	$\chi^2_1 = 484.06$
Born outside the U.S.	1.7 (0.6)	77.6 (1.9)	$p < .001$
Region[b]			
Northeast	13.4 (1.6)	63.9 (2.7)	$\chi^2_1 = 687.45$[c]
Midwest	15.7 (2.2)	3.7 (0.7)	$p < .001$
South	61.8 (2.7)	32.4 (2.1)	
West	9.1 (1.8)	0	
Urbanicity[b]			
Metro	88.0 (1.7)	100.0 (0.0)[d]	$\chi^2_2 = NA$[d]
Urban	8.2 (2.4)		$p = NA$
Rural	3.8 (2.4)		

Note: All estimates are weighted to be nationally representative of the given population and subpopulations in the coterminous 48 states of the United States. Standard errors and χ^2 statistics are adjusted for the sampling stratification, clustering, and weighting of the data. NA = not applicable.

[a] Sample size is unweighted.

[b] Reflects adult respondents' status.

[c] This χ^2 test was conducted on a two-category version of the region variable in which the Northeast and Midwest categories were collapsed together and the South and West categories were collapsed together.

[d] All Caribbean black respondents lived in metropolitan locations with population sizes of 250,000 people or more.

TABLE 2

Estimated Weighted Prevalence and Projected Risk of 12-Month and Lifetime Suicidal Attempt and Ideation by Sociodemographic Characteristics[a]

	12-Month Attempt (*n* = 17) % (SE)	12-Month Ideation (*n* = 44) % (SE)	Lifetime Attempt (*n* = 32) % (SE)	Lifetime Ideation (*n* = 95) % (SE)	Projected Risk of Attempt Age 17 Years % (SE)[b]	Projected Risk of Ideation by Age 17 Years % (SE)[b]
Overall	1.4 (0.3)	3.2 (0.6)	2.7 (0.5)	7.5 (0.9)	4.4 (0.9)	10.9 (1.3)
Ethnicity						
African American	1.5 (0.3)	3.3 (0.6)	2.8 (0.5)	7.4 (1.0)	4.5 (1.0)	10.8 (1.3)
Caribbean black	0.7 (0.4)	2.8 (0.9)	1.4 (0.4)	9.0 (3.0)	2.4 (2.9)	12.4 (5.1)
χ^2_1, *p* value	1.6, .21	0.2, .66	3.4, .1	0.3, .59		
Sex						
Male	0.8 (0.4)	2.0 (0.8)	1.5 (0.6)	5.6 (1.3)	1.5 (0.6)	7.6 (1.6)
Female	2.1 (0.4)	4.5 (0.6)	3.9 (0.8)	9.4 (1.3)	7.2 (1.7)	14.0 (2.0)
χ^2_1, *p* value	3.5, .07	4.3, .04	6.1, .01	4.1, .04		
Age category						
13–15	1.2 (0.3)	2.7 (0.7)				
16–17	1.7 (0.5)	4.0 (1.0)				
χ^2_1, *p* value	0.9, .35	1.1, .28				

Note: All prevalence estimates are weighted to be nationally representative of the given population and subpopulations in the coterminous 48 states of the United States. The SEs and χ^2 statistics are adjusted for the sampling stratification, clustering, and weighting of the data. SE = standard error.

[a] Sample size is unweighted.

[b] The SEs of the projected risk estimates are not adjusted for the stratification and clustering of the National Survey of American Life complex sample design.

TABLE 3

Multivariate Sociodemographic and *DSM-IV*/CIDI Mental Disorder Predictors of First Onset of Suicide Attempt and Suicidal Ideation[a]

	Attempt (*n* = 32) OR (95% CI)	**Ideation (*n* = 95) OR (95% CI)**
Ethnicity		
African American	1.00	1.00
Caribbean black	0.22 (0.10–0.49)*	0.84 (0.40–1.74)
χ^2_1, *p* value	13.69, <.001	0.22, .64
Sex		
Male	1.00	1.00
Female	2.96 (1.30–6.70)*	1.81 (0.97–3.38)
χ^2_1, *p* value	6.77, .009	3.42, .06
Age (continuous)[b]	0.75 (0.50–1.12)	0.86 (0.73–1.02)
χ^2_1, *p* value	1.95, .16	2.90, .09
Region		
Northeast	3.41 (1.68–6.92)*	1.67 (1.00–2.81)
Midwest	2.69 (0.81–8.96)	1.43 (0.59–3.48)
West	0.51 (0.10–2.52)	1.36 (0.54–3.43)
South	1.00	1.00
χ^2_3, *p* value	15.95, .001	3.85, .29
Yearly family income		
<$18,000	1.05 (0.20–5.42)	1.04 (0.51–2.14)
$18,000–$31,999	0.58 (0.11–3.00)	0.64 (0.27–1.52)
$32,000–$54,999	2.05 (0.39–10.80)	1.52 (0.65–3.58)
≥$55,000	1.00	1.00
χ^2_3, *p* value	10.78, .01	5.24, .15
Prior/concurrent onset of [c]		
Any mood disorder	2.99 (0.68–13.19)	2.14 (0.81–5.61)
χ^2_1, *p* value	2.08, .15	2.37, .12
Any anxiety disorder	2.99 (1.43–6.28)*	3.02 (1.73–5.26)*
χ^2_1, *p* value	8.41, .004	15.18, <.001
Any substance disorder	1.06 (0.09–11.95)	3.20 (1.01–10.26)*
χ^2_1, *p* value	0.003, .96	3.85, .05
Any impulse-control disorder	0.87 (0.27–2.84)	1.78 (0.89–3.55)
χ^2_1, *p* value	0.05, .82	2.65, .10
Any eating disorder	0.73 (0.18–3.04)	1.69 (0.37–7.78)
χ^2_1, *p* value	0.19, .67	0.46, .50

Note: Odds ratios were obtained by exponentiating the coefficients from Cox proportional hazards regression models. The 95% CIs were obtained using the Taylor series linearization method to adjust for stratification, clustering, and weighting of the data. A single model was estimated for each of the two outcomes that included all of the predictor variables. Wald χ^2 values were obtained from design-based variance-covariance matrices that adjust for the stratification, clustering, and weighting of the data. CI = confidence interval; CIDI = Composite International Diagnostic Interview; OR = odds ratio.

[a] Sample size is unweighted.

[b] Age was entered into the models as a continuous covariate. As a result, these odds ratios represent the amounts by which the odds of suicide attempt and ideation increase multiplicatively for every 1-year increase in age.

[c] The ORs for these five disorder category variables represent the multiplicative increase in the odds of the outcome occurring in the same year as or in a year subsequent to the onset of any one of the disorders contained in the given *DSM-IV* disorder category.

* $p < .05$ by a two-sided test.

TABLE 4

Multivariate Associations of NSAL/*DSM-IV* Disorders With Subsequent First Onset of Suicide Attempt and Suicidal Ideation[a]

	Attempt (*n* = 32)		Ideation (*n* = 95)	
	Models With Sociodemographic Controls Only[b] OR (95% CI)	Models With Both Sociodemographic and Psychiatric Disorder Controls[c] OR (95% CI)	Models With Sociodemographic Controls Only[b] OR (95% CI)	Models With Both Sociodemographic and Psychiatric Disorder Controls[c] OR (95% CI)
Mood disorders				
Any mood disorder	4.40 (1.09–17.83)*	2.99 (0.68–13.19)	4.38 (2.18–8.83)*	2.14 (0.81–5.61)
Major depressive disorder	5.72 (1.32–24.70)*	2.60 (0.55–12.16)	5.56 (2.45–12.58)*	2.60 (0.93–7.27)
Dysthymia	10.15 (3.39–30.39)*	3.25 (0.63–16.59)	5.17 (2.01–13.27)*	1.53 (0.73–3.22)
Bipolar I–II disorder (includes subthreshold)	2.44 (0.34–17.61	1.89 (0.23–15.46)	1.60 (0.57–4.46)	0.84 (0.23–2.52)
Anxiety disorders				
Any anxiety disorder	3.62 (1.54–8.50)*	2.99 (1.43–6.28)*	3.82 (2.29–6.38)*	3.02 (1.73–5.26)*
Panic disorder	3.45 (0.63–18.97)	0.89 (0.18–4.24)	15.79 (5.61–44.43)*	5.17 (1.84–14.51)*
Agoraphobia without panic	3.99 (1.12–14.24)*	1.73 (0.40–7.39)	2.12 (0.88–5.07)	1.03 (0.43–2.48)
Social phobia	4.21 (1.74–10.18)*	2.79 (1.38–5.62)*	3.50 (2.03–6.05)*	2.77 (1.62–4.76)*
Generalized anxiety disorder	9.65 (3.11–29.94)*	3.52 (0.45–27.47)	7.33 (2.12–25.32)*	3.89 (0.98–15.48)
Posttraumatic stress disorder	3.09 (0.78–12.20)	2.92 (0.58–14.78)	3.97 (2.44–6.44)*	1.55 (0.63–3.830)
Substance disorders[d]				
Any substance disorder	1.24 (0.14–11.02)	1.06 (0.09–11.95)	4.74 (2.01–11.19)*	3.20 (1.01–10.26)*
Alcohol abuse	2.27 (0.19–26.61)	2.00 (0.16–25.09)	9.88 (4.10–23.82)*	6.76 (1.84–24.90)*
Impulse-control disorders				
Any impulse-control disorder	1.39 (0.53–3.68)	0.87 (0.27–2.84)	2.83 (1.61–4.99)*	1.78 (0.89–3.55)
Intermittent explosive disorder	0.90 (0.29–2.79)	0.47 (0.13–1.72)	2.77 (1.51–5.10)*	1.72 (0.88–3.33)
Oppositional defiant disorder	1.30 (0.39–4.39)	0.68 (0.17–2.65)	2.36 (1.14–4.89)*	1.15 (0.51–2.57)
Conduct disorder	2.64 (0.41–16.82)	2.79 (0.49–15.85)	3.23 (1.29–8.11)*	1.92 (0.72–5.11)
Eating disorders[e]				
Any eating disorder	0.88 (0.24–3.24)	0.73 (0.18–3.04)	2.02 (0.42–9.63)	1.69 (0.37–7.78)
Bulimia	3.75 (0.73–19.19)	2.09 (0.37–11.83)	0.66 (0.12–3.57)	0.44 (0.08–2.30)
Binge-eating disorder with hierarchy	0.78 (0.07–8.07)	0.51 (0.05–5.15)	9.22 (1.47–57.71)*	5.64 (1.01–31.32)*
Any disorder	2.38 (0.89–6.37)		3.80 (2.23–6.48)*	
No. comorbid disorders				
0	1.00		1.00	
1	0.88 (0.22–3.48)		2.38 (1.16–4.86)*	
2	3.05 (0.59–15.75)		4.37 (2.19–8.71)*	
3+	7.21 (2.72–19.11)*		11.27 (5.93–21.40)*	
	$\chi^2_3 = 19.16, p < .001$		$\chi^2_3 = 66.81, p < .001$	

Note: Odds ratios were obtained by exponentiating the coefficients from Cox proportional hazards regression models. The 95% CIs were obtained using the Taylor series linearization method to adjust for stratification, clustering, and weighting of the data. CI = confidence interval; NSAL = National Survey of American Life; OR = odds ratio.

[a] Sample size is unweighted.

[b] This column presents the results from 21 models. Each model controlled for the sociodemographic variables presented in Table 3. In addition, each model contained exactly one of the 14 individual psychiatric disorders, exactly one of the 6 psychiatric disorder summary measures (any disorder, any mood disorder, etc.), or the set of dummy variables representing the number of comorbid disorders developed by the time of the outcome.

[c] This column presents the results from 6 models. Each model controlled for the sociodemographic variables presented in Table 3. In addition, one model included each of the five summary measures for the five *DSM-IV* psychiatric disorder classes (i.e., any mood disorder, any anxiety disorder, any substance disorder, any impulse-control disorder, any eating disorder). Thus, the five ORs corresponding to these five variables come from the same model. The remaining five models contain four of these five disorder class summary variables as well as each of the individual psychiatric disorders contained in the fifth disorder class. Thus, an OR corresponding to a given individual disorder comes from a model that controls for all of the other individual disorders contained in the same disorder class as well as all four of the summary measures for the other four disorder classes.

[d] Alcohol abuse was the only substance disorder with enough cases among this population to derive stable estimates; however, the summary variable, "any substance disorder," includes all four of the substance use disorders assessed in the NSAL.

[e] Anorexia nervosa did not have enough cases among this population to derive stable estimates; however, this disorder is included in the summary variable, "any eating disorder."

[*] $p < .05$ by a two-sided test.