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Panic disorder among African Americans, Caribbean blacks and non-Hispanic whites

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Abstract

Introduction—This study investigated co-morbidities, level of disability, service utilization and demographic correlates of panic disorder (PD) among African Americans, Caribbean blacks and non-Hispanic white Americans.

Methods—Data are from the National Survey of American Life (NSAL) and the National Comorbidity Survey-Replication (NCS-R).

Results—Non-Hispanic whites are the most likely to develop PD across the lifespan compared to the black subgroups. Caribbean blacks were found to experience higher levels of functional impairment. There were no gender differences found in prevalence of PD in Caribbean blacks, indicating that existing knowledge about who is at risk for developing PD (generally more prevalent in women) may not be true among this subpopulation. Furthermore, Caribbean blacks with PD were least likely to use mental health services compared to African Americans and non-Hispanic whites.

Conclusion—This study demonstrates that PD may affect black ethnic subgroups differently, which has important implications for understanding the nature and etiology of the disorder.

Keywords

Panic; Ethnicity; Epidemiology; Anxiety

Introduction

Panic disorder (PD) is an anxiety disorder characterized by recurrent, unexpected panic attacks and these attacks are followed by persistent concern over future attacks and worry about the significance or consequences of the episodes. There may also be changes in behaviors related to the attacks [1]. Approximately one in three people with PD develop PD with agoraphobia, defined as anxiety about situations from which escape may be difficult or embarrassing, followed by avoidance of these situations [2]. PD generally develops in early adulthood (median age of onset is about 24 years), and about 60 % of adults with PD meet the criteria for another lifetime psychiatric disorder [3, 4].

PD (with and without agoraphobia) is associated with high levels of physical and emotional distress, substantial impairments in social and romantic relationships, as well as increased levels of substance abuse, suicide attempts and financial difficulties [5–8]. People with PD also report lower satisfaction with their overall quality of life, indicating the pervasive nature of this disorder [9]. Furthermore, epidemiological studies suggest that PD places a high financial burden on hospitals and primary care facilities because symptoms often mimic clinical diseases, such as heart attacks, which can lead to costly diagnostic tests to rule out organic disorders [10, 11].

Data from the National Comorbidity Survey-Replication (NCS-R), a nationally representative study of psychiatric disorders, reveal that approximately 2.7 % of the adult US population has PD in a given year, and lifetime prevalence of PD is around 4.7 % [12, 13]. Analysis of the NCS-R data reveals that African Americans are less likely to develop PD compared to whites, with lifetime prevalence rates of 3.1 and 4.9 %, respectively [14]. Although there have been many studies on the impact of PD among non-Hispanic whites, there remains very little information concerning PD's specific effects on racial and ethnic minority groups in the USA. Awareness of both racial and ethnic group differences regarding disorder prevalence, impairment and mental health service utilization can inform tailored interventions for significant and growing sub-populations in the USA [14].

There is limited research focusing on how PD affects ethnic sub-populations in America, although existing research indicates there are substantial differences between racial groups. For example, studies of African Americans' mental health status show that they are as likely to differ from one another as they are to differ from non-Hispanic whites [2, 15, 16]. These findings indicate that it may be important to assess differences both among African Americans as well as among ethnic sub-groups that have previously been classified together.

Much of the research to date has examined the US black population as a homogenous group. However, recent growth in the size of black immigrant populations from Caribbean countries and Africa reveals the presence of significant ethnic variation within group in the US black population. Caribbean blacks represent roughly 4.5 % of the black population overall. Estimates from the 2000 Census indicate that Caribbean blacks make up fully one-quarter of the black population in New York, Boston, and Nassau-Suffolk, NY, over 30 % of blacks in Miami and West Palm Beach-Boca Raton, FL and 44 % of blacks in Fort Lauderdale [17]. Furthermore, there are notable differences between Caribbean blacks and African Americans, including distinct languages, forms of music, and social customs [17–19].

Additionally, although both Caribbean blacks and African Americans encounter racial discrimination in the USA, there may be important differences in how racism is experienced [20]. Previous work highlights a strong association between discrimination and mental health symptoms in African Americans [21, 22]. However, Caribbean blacks have traditionally been the majority in their countries of origin and did not directly experience the

lynching or Jim Crow laws that characterized the African American experience in the USA. Distinct from their prior life experiences in the Caribbean, being of African descent is a devalued status position in the USA that adversely affects life circumstances and opportunities in several life domains (e.g., education, employment, housing, health care). In the Caribbean context, race itself is defined along a complex continuum and African ancestry is a less central issue in determining one's social status [23]. Considering the substantial differences between these groups, coding of all blacks in America as "African American" regardless of ethnic subgroup may obscure important mental health-related differences [16].

Furthermore, although psychological disorders are seen cross-culturally, the manifestation of these conditions depends on cultural values [24]. In the Caribbean, mental health disorders are in general highly stigmatized, but mood and anxiety disorders are considered more acceptable than thought or personality disorders [25]. Given this finding, it is reasonable to hypothesize that the symptoms of panic disorder may be more salient for Caribbean populations who may view anxiety as a more culturally acceptable version of mental distress.

The National Survey of American Life (NSAL) was conducted to investigate differences in the nature and prevalence of mental disorders among African Americans, Caribbean blacks and non-Hispanic whites. The NSAL constitutes the most comprehensive study of psychopathology among American blacks completed to date [26]. NSAL data reveal that both African Americans and Caribbean blacks have particularly low mental health service utilization rates relative to whites, but blacks of Caribbean descent were more satisfied with the services received [27]. Overall, Caribbean black men had higher rates of mental health disorders compared to African American men, but Caribbean black women had lower disorder prevalence compared to African American women [28]. Research combining the NSAL and NCS-R datasets found that PD was more prevalent across the lifespan in whites (4.8 %) compared to African Americans (3.5 %) and blacks of Caribbean descent (4.1 %), but was proportionately more severe in subgroups of American blacks [29].

Previous research indicates that there are important mental health differences between Caribbean blacks, African Americans and non-Hispanic whites in the USA. However, little work has been done to assess the specific impact of PD. Understanding the specific ways PD affects these populations can help provide insight into potential target areas for future interventions. The purpose of this study is to investigate demographic differences, co-morbidities, level of disability and service utilization for PD, comparing African Americans, Caribbean blacks and non-Hispanic whites, using the National Comorbidity Survey-Replication and NSAL data-sets. Although some research has addressed mental disorders, such as depression [28] and OCD [29] among African Americans and Caribbean blacks, analysis of panic disorder has not received the same amount of detailed attention.

Methods

Sample

This study uses data from the NSAL and the National Comorbidity Survey-Replication (NCS-R). The NCS-R and NSAL are both part of the Collaborative Psychiatric Epidemiology Studies (CPES) funded by the National Institute of Mental Health and are designed to be complementary datasets. The NSAL and the NCS-R both used multi-stage area probability samples and sampling frames, sample selection, and skilled interviewers from the Institute for Social Research at the University of Michigan [30]. These data were collected from 2001 to 2003, and both datasets are representative household surveys of English-speaking, non-institutionalized adults aged 18 years and above. The sample in the

NSAL dataset included 3,570 African Americans, 1,621 blacks of Caribbean descent (Caribbean blacks), and 891 non-Hispanic whites [26, 30, 31]. The response rate in the NSAL was 72.3 %, and response rates for the two black subgroups were 77.7 % for Caribbean blacks and 70.7 % for African Americans. In this study, adults 18 years of age and older were classified as “African American” if they self-identified as black but did not indicate familial/ancestral ties to the Caribbean. “Caribbean black” refers to adults who self-identified as black and specified that they or at least one of their parents or grandparents came from a country in the Caribbean. The NCS-R was implemented in two phases: Part I included 9,282 participants and investigated core psychiatric diagnoses, and Part II included 5,692 of the Part I participants and assessed additional disorders, demographics, and risk factors [32]. The NCS-R response rate was 70.9 %. The NCS-R sample included race and ethnicity proportions similar to the US population. The NSAL and NCS-R datasets were weighted to account for non-response, disproportionate sampling probabilities and social and demographic differences between the samples in the data-set and the 2000 US Census population [30, 33]. There was an additional weight for the Part II NCS-R respondents which adjusts for the oversampling of Part I respondents. The present article examines the data on PD for the African American and Caribbean black subsamples from the NSAL and the subsample of non-Hispanic white respondents from the NCS-R. The non-Hispanic white respondents in the NSAL dataset are not incorporated in the present research because the key diagnostic sections investigated in this paper were omitted from their interviews.

Measures

Psychiatric diagnosis assessment—The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (American Psychiatric Association, 2000) (DSM-IV) World Mental Health Composite International Diagnostic Interview (WMH-CIDI), was used to assess both 12-month and lifetime DSM-IV disorders [34]. The present study investigates those who received a diagnosis of PD, and comorbid disorders with PD, based on these measures.

Assessment of functioning and disability severity—The World Health Organization’s Disability Assessment Schedule II (WHO-DAS-II) [35] was used to provide a profile of functioning, or activity limitations, during the previous 30 days. Respondents who said that their physical or mental health was not excellent or whose health had changed for the worse in the past year were administered a subset of items from the WHO-DAS-II, which assesses functioning and disability at the individual level instead of the disorder-specific level. In this study, the number of days with disability out of 30, weighted by the severity of difficulty, is presented as a percentage, a score from 0 to 100, with “100” representing the most severe impairment and “0” representing no impairment. “Time out of role” expresses an overall burden of illness score, the number of days in the previous 30 that respondents were unable to carry out normal activities, either by being totally unable to function, cutting back on productivity or quality, or functioning only with supreme effort. “Role impairment” is a subset of the total “time out of role” score, the number of days respondents had to cut down on productivity or quality, or use extreme effort to maintain productivity. Severity of impairment is also reported in four specific domains: cognition (e.g., concentration, memory, etc.), mobility (e.g., moving, standing, etc.), self-care (e.g., washing, dressing, etc.) and social interaction (e.g., conversing, maintaining friendships, etc.). These domain impairment results are also reported for overall individual, rather than disorder specific, functioning.

Severity of role impairment—The Sheehan Disability Scale was utilized to examine the severity of role impairment associated with respondents’ panic disorder. Using a 0–10 visual scale, respondents were asked about functional impairment during the month with the most

severe impairment in the past 12 months in four interrelated role domains: home responsibilities, work performance, intimate relationships, and social life. Severe role impairment associated with panic disorder is defined as a score of 7 or more in any domain; moderate impairment, a score of 4, 5 or 6 in any domain, and mild role impairment, a score of 3 or less in all domains. The Sheehan Disability Scale has demonstrated adequate validity and reliability for assessment of PD impairment [36].

Socio-demographic correlates—The present study investigated associations of several socio-demographic variables to identify individuals at elevated risk of panic disorder. The socio-demographic correlates included were race, ethnicity, sex, age, years of education completed, marital status, region (as defined by the Bureau of Census' Department of Labor) and income. The socio-demographic variables were chosen because they have been shown to relate to psychiatric disorders and are consistent with other research in this field.

Treatment utilization—Participants were asked if they had seen any treatment providers (they chose from an extensive list) for issues with their mental health, emotions, nerves or use of alcohol or drugs in the past 12 months.

Medication utilization—Participants were asked which medications they had used in the past 12 months. They chose from an exhaustive visual list of psychiatric medications and were allowed to select as many medications as appropriate.

Statistical analysis

All analyses were weighted with a combined version of the NCS-R and NSAL. Panic disorder was assessed in Part II of the NCS-R interview, and the NCS-R Part II weight was applied to the analyses of Panic disorder. Standard errors, confidence intervals, and significance tests were appropriately adjusted for the complex sample designs of the NSAL and NCS-R. Cross-tabulations are presented to illustrate black ethnic differences in the prevalence of 12-month and lifetime PD and were conducted using the Survey Tabulate procedure of the Stata Release 9 software package [37]. The χ^2 and corresponding p values from these cross-tabulations are based on the Rao-Scott Chi-square test, a complex design-adjusted version of the Pearson Chi-square test [37]. Similarly means scores, pairwise t tests between race/ethnic groups and logistic regressions were adjusted for complex samples design. Multivariate logistic regression was applied to assess socio-demographic predictors of lifetime and 12-month panic disorder. Multivariate analyses were not conducted for 12-month panic disorder within the Caribbean black group due to the low sample size ($n = 28$). Design-corrected Wald F statistics were conducted for the multivariate significance tests. Unless otherwise stated, $p < 0.05$ on a 2-sided design-based test of significance was applied as a cutoff assessing statistical significance. Missing data was handled via listwise deletion. All Stata procedures used the Taylor-series linearization technique for calculating the complex design-based estimates of variance and standard error.

Results

Sample characteristics

Table 1 shows the socio-demographic characteristics of all Caribbean black, African American and non-Hispanic white groups in the combined NSAL and NCS-R sample. Caribbean blacks were more likely to reside in the Northeast compared to African Americans and non-Hispanic whites. Non-Hispanic whites had the lowest rates of poverty and the highest average income.

Prevalence

The lifetime prevalence rate of PD for the sample was 4.6 %. The 12-month prevalence rate was 2.6 % (see Table 2). There were significant differences in lifetime prevalence rates between racial groups; non-Hispanic whites being the most likely to develop PD across the lifespan (4.8 %), followed by Caribbean blacks (4.1 %) and African Americans (3.5 %). There were, however, no significant differences in 12-month prevalence by group. Table 2 also reveals that more females have had PD across the lifespan (5.9 %) and in the past 12 months (3.4 %) than males (3.2 and 1.6 %, respectively).

To help understand the disorder prevalence findings, we examined race and ethnic differences in response to the two panic disorder screening questions. In order to enter the panic disorder section, respondents had to respond yes to one of these screening questions, “Have you ever in your life had an attack of fear or panic when all of a sudden you felt very frightened, anxious or uneasy?” or, if they said no to the first question, “Have you ever had an attack when all of a sudden you became very uncomfortable, you either became short of breath, dizzy, nauseous, or your heart pounded, or you thought you might lose control, die, or go crazy?” There were highly significant different responses to the first question, with 36 % of African Americans, 39 % of Caribbean blacks, and 47.8 % of non-Hispanic whites, respectively, responding affirmatively. Responses to the second question were not significantly different (9.7, 6.6 and 9.6 %, respectively). Given that so many more non-Hispanic whites than African Americans and Caribbean blacks entered the panic section, the responses to this initial stem question meaningfully influences the proportions of each group who meet criteria for the disorder.

Comorbidity

Table 3 reveals that a striking majority of the PD sample (82.1 %) met criteria for at least one other lifetime psychiatric disorder. Non-Hispanic whites with PD were significantly more likely to meet criteria for generalized anxiety disorder (35.6 %) compared to African Americans (15.8 %) and Caribbean blacks (10.7 %). One reason for the lower comorbidity with GAD is tied to race ethnic differences in the GAD “apprehensive expectation” of criteria A. Further bivariate analyses reveal significant differences in response to the GAD question: “Do you think your (worry or anxiety) was ever excessive or a lot stronger than it should have been?” Non-Hispanic whites were more likely to endorse this question and meet GAD criteria (54 %) than African Americans (50 %) or Caribbean blacks (42 %) ($p < 0.01$). On the other hand, PD was more co-morbid with eating disorders for African Americans (17 %) compared to Caribbean blacks (11.3 %) and non-Hispanic whites (5.9 %).

Multivariate socio-demographic predictors

Table 4 presents multivariate odds ratios for PD risk. Analyses involving the combined PD sample showed statistically significant elevations of lifetime PD among those who were 35–54 years of age. Those who were 55 years of age and older were at lower odds of meeting criteria for both lifetime and 12-month PD. Non-Hispanic whites were more likely than African Americans and Caribbean blacks to be at risk for lifetime PD, African Americans were less likely than Whites to meet criteria for 12-month PD. There were no significant differences in the risk of 12-month or lifetime PD between African Americans and Caribbean blacks (analysis not shown). Women and respondents who were divorced/separated/widowed were more likely to meet criteria for both lifetime and 12-month PD. Lifetime risk of PD was also elevated for those who were below the poverty line. These trends were not, however, the same across all sub-populations.

For example, African Americans were not more likely to meet criteria for PD if they were below the poverty line and were as likely to meet criteria for PD if they were six times or

more above the poverty line. They were least likely to meet criteria for PD if they were 3–6 times above the poverty line and more likely if unemployed and not in the labor force. Non-Hispanic whites, on the other hand, were more likely to meet criteria for PD if they were below the poverty line. Caribbean blacks were most likely to meet criteria for PD if they had never been married, which was in contrast to the general sample, where people were most likely to meet criteria for PD if they were divorced or widowed. Another interesting difference is that being female was associated with elevated risk of meeting criteria for PD for African Americans and whites but not for Caribbean blacks. Additionally, the odds for having lifetime PD for Caribbean blacks decreased with higher levels of education, but not for the other groups.

WHO-DAS-II functional disability

The combined 12-month sample showed significantly greater impairment on the “time out of role”, “role impairment”, cognition, mobility and social functioning subscales of the WHO-DAS-II for people with PD compared to a pooled group of NSAL participants meeting criteria for any other 12-month psychiatric disorder other than PD. Table 5 presents the level of functional disability related to PD by race and ethnic group. There were racial and ethnic differences in functional impairment. For example, level of role impairment was similar for African Americans and non-Hispanic whites, but was lower for Caribbean blacks. On the other hand, impairments in the specific domain of cognition were significantly higher for Caribbean blacks (mean = 21), followed by African Americans (mean = 10) and non-Hispanic whites (mean = 5.9). Furthermore, Caribbean blacks were also significantly more impaired in self-care and social functioning compared to African Americans and whites.

Sheehan severity of role impairment

Respondents were classified as having mild, moderate or severe impairment in four domains: home management, ability to work, relationships and social life. More participants (47.7 %) with 12-month PD were found to have a severe level of role impairment, in at least one domain, than mild (28.4 %) and moderate (23.9 %) levels (see Table 6). There were no significant racial and ethnic differences found when domains were combined, but when the four domains were assessed individually, racial differences were found in both home management ($p < 0.00$) and ability to work ($p < 0.025$). In the home management domain, 35.5 % of Caribbean Blacks reported severe impairment versus 19.6 % of African Americans and 24.7 % of non-Hispanic whites, respectively. In the ability to work domain, 37.2 % of Caribbean Blacks reported severe impairment whereas 26.4 % of non-Hispanic whites and 33.8 % of African Americans reported severe impairment, respectively. No significant race/ethnic differences were found in the other two domains (relationships and social life).

Service utilization and severity

Among respondents with 12-month PD, 59.1 % used at least one of the assessed services within the previous 12 months, and 34.8 % had seen a mental health specialist (Table 7). There were numerous racial and subpopulation differences found in use of services. Overall, whites were more likely to use any service (61.8 %) compared to African Americans (39.6 %) and Caribbean blacks (44 %). Caribbean blacks were significantly less likely to use mental health services (9 %) compared to African Americans (20 %) and non-Hispanic whites (36 %). However, their use of general medical professionals was higher (34.9 %) than African Americans (20.3 %), but was still lower than whites (41.3 %); these differences were statistically significant.

Medication use

Cross-tabulation analyses were performed in order to assess racial differences in medication use for respondents who met criteria for PD. Non-Hispanic whites were significantly more likely to be taking medication (44.7 %) than Caribbean blacks (28.3 %) and African Americans (25.4 %), and the differences were statistically significant [$\chi^2(1.9) = 7, p < 0.001$]. Additional cross-tabulation analyses were performed on medication type (SSRI's, benzodiazepines, etc.) differences between race and ethnic groups; however, no statistically significant differences were found.

Discussion

The results of this study revealed that PD is a prevalent and significantly impairing disorder for Caribbean blacks, African Americans and non-Hispanic whites. Consistent with previous findings [12, 14], PD is prevalent, highly co-morbid with other disorders, and affects social and vocational functioning. Although 61.8 % of the non-Hispanic whites are receiving some form of treatment, mental health service utilization is relatively low for all groups, indicating that currently available mental health services are not meeting the needs of the general population nor specific subgroups.

These findings indicate that lifetime occurrence of PD is more common in non-Hispanic whites compared to Caribbean blacks and African Americans. The higher lifetime risk of PD for non-Hispanic whites may seem counterintuitive given the increased levels of economic stress and racism experienced by blacks [38]. However, these results are consistent with research that has shown that African Americans report similar, and in many cases, lower rates of major psychiatric disorders than non-Hispanic whites, even when controlling for socio-economic status and other potential confounders [12, 14, 39].

There are several explanations for why African Americans and Caribbean blacks report lower rates of panic disorder. First, it may be a methodological issue related to cultural differences. In our analysis, African American and Caribbean blacks respond significantly less often to the screening question, "Have you ever in your life had an attack of fear or panic when all of a sudden you felt very frightened, anxious or uneasy?" and therefore do not enter the panic disorder section of the questionnaire. The responses to this question may reflect true differences in rates of this key panic disorder experience. It may also mean that this question is not culturally relevant for African American and Caribbean black respondents. We do not know if asking the question in a different way might identify more valid panic disorder cases. Although reappraisal studies have found that survey assessments of mental disorders perform equally well for non-Hispanic whites and blacks [40], our own work suggests that there is a need for more work in this area. In the NSAL clinical reappraisal study, the kappa score for 12-month panic disorder in the overall NSAL sample was good (0.51). The k value for the overall NSAL sample was comparable with that obtained in the NCS-R ($k = 0.45$, for a reappraisal of lifetime panic) [41], and the NLAAS ($k = 0.63$, 12 months) reappraisal study which used the same CIDI and SCID instruments in a sample of Latino respondents [42]. However, in the NSAL study, there were marked differences in concordance with the clinical reappraisal analyses for African Americans versus NSAL whites. Additional work is needed to better understand the validity of using both the CIDI and the SCID to assess panic disorder in African American and Caribbean black samples.

A second potential explanation for the low rates of panic disorder among African Americans may lie in their childhood socialization experiences. There is a robust literature in child development on racial socialization which indicates that many African American children are socialized to expect hostility, irrational restrictions, insults and unfair treatment based on

the color of their skin. To counteract these predictable trends, African American children are taught to develop high levels of tolerance for unfair acts [43]. This type of socialization has been shown to be protective of mental health symptoms [44], and thus, may buffer against PD more specifically. Additional work is needed to establish whether a link between racial socialization of African Americans and PD exists.

An equally promising explanation for the lower levels of psychiatric disorders among African Americans has recently been put forth by Jackson and colleagues [45–47]. They argue that mental and physical health disorders are functionally related and that lower rates of psychiatric disorders in African Americans may come at the expense of higher rates of physical disorders. They argue that, when confronted with the stressors of daily life (e.g., lower socioeconomic status, high crime neighborhoods and poor housing), African Americans will engage in unhealthy behaviors (e.g., smoking, alcohol use, eating of comfort foods and overeating). These unhealthy behaviors may reduce the likelihood of developing a mental disorder, but increase the likelihood of developing chronic physical disorders in later life (e.g., diabetes, heart disease). Recent articles by this group provide empirical evidence to support this theory [46, 47]. Relatedly, Hunter and Schmidt [48] argue that African Americans may interpret anxiety symptoms as physical problems, and thus, may be less likely to seek treatment for or be diagnosed with anxiety disorders. These explanations indicate that more work needs to be done to clarify the relationship between PD and physical disorders.

Disorder co-morbidities among the respondents with PD in this sample were extremely high (82 %), but there were differences across racial and ethnic groups. The finding that GAD was more prevalent in whites with PD is intriguing. Breslau et al. [14] found that internalizing disorders (including GAD) tend to be less prevalent among ethnic minorities in America. Similar to our previous discussion, they suggest that ethnic minorities have protective factors (e.g., ethnic identification, religiosity, familial support networks) that may buffer them against developing internalizing disorders [14].

Interestingly, eating disorders were highly co-morbid with PD for African Americans compared to the other groups. NSAL data indicate that binge eating disorder is the most common eating disorder among blacks in America [49]. This finding is consistent with the argument that African Americans may use food as a coping mechanism to deal with the high levels of environmental stressors they experience [45–47]. Furthermore, having a diagnosis of binge eating disorder has been associated with elevated risk of PD [50]. Thus, it is reasonable to hypothesize that binge eating disorder may account for some of the PD found among African Americans.

Socio-demographic correlates also reveal several interesting findings. African Americans were most likely to meet criteria for PD if they were below the poverty line, or very high above the poverty line, compared to those at intermediate levels. The finding that African Americans below the poverty line are more likely to meet criteria for PD is consistent with research that African Americans are more likely to be exposed to environmental stressors that may affect their mental health [51, 52]. However, the finding that African Americans who are substantially above the poverty line are equally likely to meet criteria for PD is somewhat counter intuitive. Coner-Edwards and Spurlock [53] argue that although African Americans who are wealthier have more material comforts, they still experience interpersonal racism. Research has found that African Americans with higher levels of socio-economic status are more likely to experience direct, interpersonal discrimination [54]. This is in part due to the fact they are more likely to live and work in more racially diverse settings where exposure to interpersonal racism is more frequent [55, 56]. Research also indicates that the negative influence of racial discrimination on well-being was stronger

among African Americans with more socioeconomic resources than those without such resources [54]. Additionally, NCS-R data show that those who experienced higher levels of perceived discrimination were more likely to have an anxiety disorder [21]. Perhaps higher levels of perceived discrimination contribute to African American's distress and may help explain the elevated rates of PD among economically better-off African Americans with PD.

Unexpectedly, Caribbean black women did not have an increased risk of developing PD compared to men. Researchers have identified both interpersonal and biological factors that promote higher levels of anxiety disorders for women [57, 58]; thus, this finding is especially noteworthy. Data from the NSAL have shown that Caribbean black men have higher rates of both mood and anxiety disorders, as well as suicidal behavior compared to Caribbean black women [28, 31]. The present findings that Caribbean black men are more likely to have PD are less surprising in this context. Previous work has identified certain reasons why Caribbean men may have higher rates of PD and other psychiatric disorders. Research has generally found that regardless of the race, men have a more difficult time adjusting to the migration experience [59]. In the case of Caribbeans, men have a more difficult time finding employment and are more likely to be underemployed. Conversely, many women were recruited to assume roles in allied health professions (e.g., nurses and nurses' aides) and generally have increased job and educational opportunities in the USA [59, 60]. Additionally, the structure of Caribbean society is patriarchal. In the USA, Caribbean black women have more freedom from traditional general roles and more autonomy [59]. Conversely, Caribbean black men may experience a stressful weakening of family power in the USA which could in turn, negatively impact their mental health [61]. These dynamics may help explain why Caribbean black men and women have similar levels of PD.

The extensive examination of functional impairment in this study illustrated the differential impact of PD among the three groups. Caribbean blacks had lower levels of WHO-DAS-defined role impairment compared to the other two groups examined, but had higher levels of almost every other type of specific impairment measured (cognition, self-care and social functioning). Additionally, although these data show that there were no significant differences in the overall Sheehan role impairment levels across racial and ethnic groups, Caribbean blacks had the highest levels of disability in the domains of home management and ability to work. African Americans were most likely to report higher than mild levels of disability, and both groups reported more impairment than non-Hispanic whites. Although Friedman et al. [62] showed that symptoms of PD are similar among whites and blacks (African Americans and Caribbean blacks were not separated in their study), the present findings suggest that PD may be more burdensome for Caribbean blacks and that domains of impairments differ by race and ethnicity.

Despite the striking impact of PD, mental health service utilization was extremely low for Caribbean blacks compared to both African Americans and non-Hispanic whites. One possible reason for this discrepancy (which has also been found in the UK) is that Caribbean blacks are wary of the mental health system because of poor previous experiences and lack of cultural sensitivity on the part of professional staff members [63]. Length of time in the USA may also play a role in low service use among Caribbean blacks given that NSAL data indicate that Caribbean blacks are more likely to use mental health services the longer they have been living in the USA [27]. Recent immigrants in particular, are more likely to have low-wage jobs which do not include work-related benefits, including health insurance. Interestingly, once Caribbean blacks engage in treatment, research shows that they are often more satisfied with services received compared to African Americans, suggesting that stigma against using mental health resources may be the main explanation for the low use of

services among Caribbean blacks [27]. However, future research is needed to further delineate the reasons for low mental health service use among Caribbean blacks with PD.

Findings related to medication use showed that there were no statistically significant racial and ethnic group differences with respect to type of medication taken. Non-Hispanic whites, however, were significantly more likely to utilize psychotropic medications overall compared to African Americans or Caribbean blacks. These results are consistent with previous research indicating that Caribbean blacks and African Americans are less likely to use mental health services and take medication for psychiatric disorders compared to non-Hispanic whites [27]. There is a clear need for further understanding of the gap in service use between non-Hispanic whites and Caribbean blacks and African Americans.

This study has limitations, and some conclusions must be interpreted with caution. Although this is the largest study of Caribbean blacks, African Americans and Non-Hispanic whites to date, the relatively small number of African Americans and Caribbean blacks with PD limits statistical power while estimating interactions between race and ethnicity and socio-demographic correlates of PD. Additionally, the small sample size of Caribbean blacks with 12-month PD is a significant limitation and results should be interpreted with caution. Although the sample is small, these data represent one of the largest samples of Caribbean blacks with PD collected to date. Finally, causal inferences are problematic with cross-sectional data and so longitudinal data are preferred. Future research on this issue using longitudinal data is needed.

This study confirmed previous work showing that panic disorder is highly co-morbid and is associated with significant impairment. The research contributes to the extant research by providing comprehensive information on PD on the black population in the USA, showing that although the prevalence of PD is lower among Caribbean blacks and African Americans than non-Hispanic whites, PD is a significant public health problem for Caribbean blacks and African Americans. This study demonstrates that homogenous categorizations of blacks may prevent researchers from determining differential prevalence rates, risk factors and impairment between black sub-populations, as PD was shown to affect African Americans and Caribbean blacks in different, specific ways. In contrast to the usual finding of greater prevalence in women, no gender differences were found in the prevalence of PD in Caribbean blacks, indicating that existing knowledge about who is at risk for developing PD may not apply very well to Caribbean blacks. Perhaps most importantly, this research found the differential use of services for the treatment of PD: non-Hispanic whites with PD were significantly more likely to utilize psychotropic medications compared to African Americans or Caribbean blacks, and Caribbean blacks are least likely to use mental health specialty care. Increased knowledge of race and ethnic differences in PD prevalence, impairment, disorder co-occurrence and mental health service utilization can help inform tailored interventions and public mental health awareness campaigns for Caribbean blacks and African Americans in the USA. The race and ethnic differences found in this study suggest that more refined research is needed to fully understand and treat PD in Caribbean black and African American populations.

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References

1. American Psychiatric Association. Diagnostic and statistical manual of mental disorders: DSM-IV-TR. American Psychiatric Publishing, Inc; Arlington: 2000.
2. Robins, LN.; Regier, DA. Psychiatric disorders in America: the epidemiologic catchment area study. Free Press; New York: 1991.
3. Brown TA, Campbell LA, Lehman CL, Grisham JR, Mancill RB. Current and lifetime comorbidity of the DSM-IV anxiety and mood disorders in a large clinical sample. *J Abnorm Psychol*. 2001; 110(4):585. [PubMed: 11727948]
4. Kessler RC, Berglund P, Demler O, Jin R, Merikangas KR, Walters EE. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Arch Gen Psychiatry*. 2005; 62(6):593. [PubMed: 15939837]
5. Markowitz JS, Weissman MM, Ouellette R, Lish JD, Klerman GL. Quality of life in panic disorder. *Arch Gen Psychiatry*. 1989; 46(11):984. [PubMed: 2684086]
6. Weissman MM. Panic disorder: impact on quality of life. *J Clin Psychiatry*. 1991; 52:6–8. [PubMed: 1995601]
7. Simon NM, Otto MW, Korbly NB, Peters PM, Nicolaou DC, Pollack MH. Quality of life in social anxiety disorder compared with panic disorder and the general population. *Psychiatr Serv*. 2002; 53(2):714–718. [PubMed: 12045308]
8. Birchall H, Brandon S, Taub N. Panic in a general practice population: prevalence, psychiatric comorbidity and associated disability. *Soc Psychiatry Psychiatr Epidemiol*. 2000; 35(6):235–241.10.1007/s001270050233 [PubMed: 10939421]
9. Barrera TL, Norton PJ. Quality of life impairment in generalized anxiety disorder, social phobia, and panic disorder. *J Anxiety Disord*. 2009; 23(8):1086–1090. [PubMed: 19640675]
10. Katon W. Panic disorder: relationship to high medical utilization, unexplained physical symptoms, and medical costs. *J Clin Psychiatry*. 1996; 57(Suppl 10):11–18. discussion 19–22. [PubMed: 8917128]
11. Wagner JA, Pietrzak RH, Petry NM. Psychiatric disorders are associated with hospital care utilization in persons with hypertension: results from the National Epidemiologic Survey on alcohol and related conditions. *Soc Psychiatry Psychiatr Epidemiol*. 2008; 43(11):878–888.10.1007/s00127-008-0377-2 [PubMed: 18575791]
12. Kessler RC, Chiu WT, Demler O, Walters EE. Prevalence, severity, and comorbidity of 12-month DSM-IV disorders in the National Comorbidity Survey Replication. *Arch Gen Psychiatry*. 2005; 62(6):617. [PubMed: 15939839]
13. Kessler RC, Chiu WT, Jin R, Ruscio AM, Shear K, Walters EE. The epidemiology of panic attacks, panic disorder, and agoraphobia in the National Comorbidity Survey Replication. *Arch Gen Psychiatry*. 2006; 63(4):415. [PubMed: 16585471]
14. Breslau J, Aguilar-Gaxiola S, Kendler KS, Su M, Williams DR, Kessler RC. Specifying race-ethnic differences in risk for psychiatric disorder in a USA national sample. *Psychol Med*. 2006; 36(1):57–68. [PubMed: 16202191]
15. Himle JA, Baser RE, Taylor RJ, Campbell RD, Jackson JS. Anxiety disorders among African Americans, blacks of Caribbean descent, and non-Hispanic whites in the United States. *J Anxiety Disord*. 2009; 23(5):578–590. [PubMed: 19231131]
16. Williams, DR.; Harris-Reid, M. Race and mental health: emerging patterns and promising approaches. In: Horwitz, AV.; Scheid, TL., editors. *A handbook for the study of mental health: social context, theories and systems*. Cambridge University Press; New York: 1999. p. 295-314.
17. Logan, J.; Deane, G. Diversity in Metropolitan America. 2003. Retrieved 19 Mar 2008
18. Kasinitz, P. Caribbean New York: black immigrants and the politics of race. Cornell Univ Press; New York: 1992.
19. Waters, MC. Black identities: West Indian immigrant dreams and American realities. Harvard University Press; Cambridge: 2001.
20. Gopaul-McNicol, SA.; Brice-Baker, J. Cross-cultural practice: assessment, treatment, and training. Wiley; New York: 1998.

21. Kessler RC, Mickelson KD, Williams DR. The prevalence, distribution, and mental health correlates of perceived discrimination in the United States. *J Health Soc Behav.* 1999; 40(3):208–230. [PubMed: 10513145]
22. Soto JA, Dawson-Andoh NA, BeLue R. The Relationship between perceived discrimination and generalized anxiety disorder among African Americans; Afro Caribbeans and non-Hispanic Whites. *J Anxiety Disord.* 2011; 25:258–265. [PubMed: 21041059]
23. Vickerman, M. *Crosscurrents: West Indian immigrants and race.* Oxford University Press; New York: 1999.
24. Helms, JE.; Ponterotto, JG.; Casas, JM.; Suzuki, LA.; Alexander, CM. *Handbook of multicultural counseling.* Sage Thousand Oaks; Beverly Hills: 1995.
25. Gopaul-McNicol S. Caribbean families: social and emotional problems. *J Soc Distress Homeless.* 1998; 7(1):55–73.
26. Jackson JS, Torres M, Caldwell CH, Neighbors HW, Nesse RM, Taylor RJ, Trierweiler SJ, Williams DR. 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]
27. Jackson JS, Neighbors HW, Torres M, Martin LA, Williams DR, Baser R. Use of mental health services and subjective satisfaction with treatment among Black Caribbean immigrants: results from the National Survey of American Life. *Am J Public Health.* 2006
28. Williams DR, Haile R, Gonzalez HM, Neighbors H, Baser R, Jackson JS. The mental health of Black Caribbean immigrants: results from the National Survey of American Life. *Am J Public Health.* 2007; 97(1):52. [PubMed: 17138909]
29. Himle JA, Muroff JR, Taylor RJ, Baser RE, Abelson JM, Hanna GL, Abelson JL, Jackson JS. Obsessive–compulsive disorder among African Americans and blacks of Caribbean descent: results from the national survey of American life. *Depress Anxiety.* 2008; 25(12):993–1005. [PubMed: 18833577]
30. Heeringa SG, Wagner J, Torres M, Duan N, Adams T, Berglund P. Sample designs and sampling methods for the Collaborative Psychiatric Epidemiology Studies (CPES). *Int J Methods Psychiatr Res.* 2004; 13(4):221–240. [PubMed: 15719530]
31. Joe S, Baser RE, Breeden G, Neighbors HW, Jackson JS. Prevalence of and risk factors for lifetime suicide attempts among blacks in the United States. *JAMA.* 2006; 296(17):2112. [PubMed: 17077376]
32. Kessler RC, Merikangas KR. The National Comorbidity Survey Replication (NCS-R): background and aims. *Int J Methods Psychiatr Res.* 2004; 13(2):60–68. [PubMed: 15297904]
33. Heeringa, SG.; Torres, M.; Sweetman, J.; Baser, R. Technical Report. Survey Research Center, Institute for Social Research, University of Michigan; Ann Arbor: 2006. Sample design, weighting and variance estimation for the 2001–2003 National Survey of American Life (NSAL) adult sample.
34. Kessler RC, Üstün TB. The world mental health (WMH) survey initiative version of the world health organization (WHO) composite international diagnostic interview (CIDI). *Int J Methods Psychiatr Res.* 2004; 13(2):93–121. [PubMed: 15297906]
35. Rehm J, Üstün TB, Saxena S, Nelson CB, Chatterji S, Ivis F, Adlaf ED. On the development and psychometric testing of the WHO screening instrument to assess disablement in the general population. *Int J Methods Psychiatr Res.* 1999; 8(2):110–122.
36. Leon AC, Shear MK, Portera L, Klerman GL. Assessing impairment in patients with panic disorder: the Sheehan Disability Scale. *Soc Psychiatry Psychiatr Epidemiol.* 1992; 27(2):78–82. [PubMed: 1594977]
37. StataCorp. *Stata statistical software: release 9.* StataCorp, LP: College Station; 2005.
38. Clark R, Anderson NB, Clark VR, Williams DR. Racism as a stressor for African Americans: a biopsychosocial model. *Am Psychol.* 1999; 54(10):805. [PubMed: 10540593]
39. Riolo SA, Nguyen TA, Greden JF, King CA. Prevalence of depression by race/ethnicity: findings from the National Health and Nutrition Examination Survey III. *Am J Public Health.* 2005; 95(6):998. [PubMed: 15914823]

40. Breslau J, Javaras KN, Blacker D, Murphy JM, Normand SLT. Differential item functioning between ethnic groups in the epidemiological assessment of depression. *J Nerv Ment Dis*. 2008; 196(4):297. [PubMed: 18414124]
41. Haro JM, Arbabzadeh-Bouchez S, Brugha TS, De Girolamo G, Guyer ME, Jin R, Lepine JP, Mazzi F, Reneses B, Vilagut G. Concordance of the Composite International Diagnostic Interview Version 3.0 (CIDI 3.0) with standardized clinical assessments in the WHO World Mental Health surveys. *Int J Methods Psychiatr Res*. 2006; 15(4):167–180. [PubMed: 17266013]
42. Alegria M, Shrout PE, Torres M, Lewis-Fernández R, Abelson JM, Powell M, Interian A, Lin J, Laderman M, Canino G. Lessons learned from the clinical reappraisal study of the Composite International Diagnostic Interview with Latinos. *Int J Methods Psychiatr Res*. 2009; 18(2):84–95. [PubMed: 19507168]
43. Thornton MC, Chatters LM, Taylor RJ, Allen WR. Sociodemographic and environmental correlates of racial socialization by Black parents. *Child Dev*. 1990; 61(2):401–409. [PubMed: 2344778]
44. Fischer AR, Shaw CM. African Americans' mental health and perceptions of racist discrimination: the moderating effects of racial socialization experiences and self-esteem. *J Couns Psychol*. 1999; 46(3):395.
45. Jackson, JS.; Knight, KM. Social structures, aging, and self-regulation in the elderly. Springer; New York: 2006. Race and self-regulatory health behaviors: the role of the stress response and the HPA axis in physical and mental health disparities; p. 189-207.
46. Jackson JS, Knight KM, Rafferty JA. Race and unhealthy behaviors: chronic stress, the HPA axis, and physical and mental health disparities over the life course. *Am J Public Health*. 2010; 100(5): 933. [PubMed: 19846689]
47. Mezuk B, Rafferty JA, Kershaw KN, Hudson D, Abdou CM, Lee H, Eaton WW, Jackson JS. Reconsidering the role of social disadvantage in physical and mental health: stressful life events, health behaviors, race, and depression. *Am J Epidemiol*. 2010; 172(11):1238. [PubMed: 20884682]
48. Hunter LR, Schmidt NB. Anxiety psychopathology in African American adults: literature review and development of an empirically informed sociocultural model. *Psychol Bull*. 2010; 136(2):211. [PubMed: 20192561]
49. Taylor JY, Caldwell CH, Baser RE, Faison N, Jackson JS. Prevalence of eating disorders among Blacks in the National Survey of American Life. *Int J Eat Disord*. 2007; 40(S3):S10–S14. [PubMed: 17879287]
50. Yanovski SZ, Nelson JE, Dubbert BK, Spitzer RL. Association of binge eating disorder and psychiatric comorbidity in obese subjects. *Am J Psychiatry*. 1993; 150(10):1472–1479. [PubMed: 8379549]
51. Kessler RC. Stress, social status, and psychological distress. *J Health Soc Behav*. 1979; 20(3):259–272. [PubMed: 479536]
52. Kessler RC, Neighbors HW. A new perspective on the relationships among race, social class, and psychological distress. *J Health Soc Behav*. 1986; 27(2):107–115. [PubMed: 3734380]
53. Coner-Edwards, AF.; Spurlock, J. Black families in crisis: the middle class. Routledge; New York: 1988.
54. Forman TA. The social psychological costs of racial segmentation in the workplace: a study of African Americans' well-being. *J Health Soc Behav*. 2003; 44(3):332–352. [PubMed: 14582312]
55. Feagin, JR.; McKinney, KD. The many costs of racism. Rowman & Littlefield Pub Inc; New York: 2005.
56. Keith VM, Lincoln KD, Taylor RJ, Jackson JS. Discriminatory experiences and depressive symptoms among African American women: do skin tone and mastery matter? *Sex Roles*. 2010; 62(1):48–59. [PubMed: 21151821]
57. Silverman, WK.; Carter, R. Anxiety disturbance in girls and women. In: Worrell, J.; Goodheart, CD., editors. *Handbook of girls' and women's psychological health*. Oxford University Press; New York: 2006. p. 60-68.
58. Altemus M. Sex differences in depression and anxiety disorders: potential biological determinants. *Horm Behav*. 2006; 50(4):534–538. [PubMed: 16920114]

59. Foner, N. In a new land: a comparative view of immigration. NYU Press; New York: 2005.
60. Butterfield SAP. Challenging American conceptions of race and ethnicity: second generation West Indian immigrants. *Int J Sociol Soc Policy*. 2004; 24(7/8):75–102.
61. Chevannes, B. Learning to be a man: culture, socialization, and gender identity in five Caribbean communities. University of the West Indies Press; Kingston: 2001.
62. Friedman S, Paradis CM, Hatch M. Characteristics of African-American and White patients with panic disorder and agoraphobia. *Hosp Community Psychiatry*. 1994; 45:798–803. [PubMed: 7982696]
63. McLean C, Campbell C, Cornish F. African-Caribbean interactions with mental health services in the UK: experiences and expectations of exclusion as (re) productive of health inequalities. *Soc Sci Med*. 2003; 56(3):657–669. [PubMed: 12570981]

Table 1

Socio-demographic weighted distribution of the NSAL blacks and NCS-R whites sample compared by race/ethnicity

Characteristics	African Americans (N = 3,570)		Caribbean blacks (N = 1,621)		Non-Hispanic whites (N = 6,696)	
	n	%	n	%	n	%
Age (years)						
18–34	1,232	35.7	624	41.9	1,966	28.1
35–54	1,501	42.6	693	38.7	2,624	40.9
55+	837	21.6	304	19.4	2,103	31.0
Sex						
Male	1,271	44.0	643	50.9	3,078	48.3
Female	2,299	56.0	978	49.1	3,618	51.7
Work status						
Employed	2,334	66.8	1,183	75.2	4,355	65.6
Unemployed	366	10.1	158	8.8	565	8.4
Not in labor force	861	23.1	279	16.0	1,748	26.0
Education (years)						
0–11	920	24.2	306	21.2	824	13.2
12	1,362	37.9	481	29.6	1,983	31.3
13–15	809	23.8	443	26.1	1,967	28.5
16	479	14.1	391	23.1	1,922	27.0
Poverty index						
Poverty line or lower	1,430	36.7	440	27.2	670	17.4
1× to 3× Poverty line	1,338	38.1	666	38.6	1,153	27.5
3× to 6× Poverty line	623	19.1	356	20.0	1,358	31.9
6× Poverty line	179	6.1	159	14.2	999	23.3
Marital status						
Married/cohabitating	1,222	41.7	693	50.2	4,052	59.2
Divorced/separated/widowed	1,164	26.8	385	18.9	1,446	20.2
Never married	1,176	31.6	543	30.9	1,198	20.6

Reported *n*'s represent the unweighted sample sizes. All reported percentages are weighted to be nationally representative of the given population and subpopulations in the coterminous 48 states of the USA

Table 2

Prevalence of DSM-IV/WMH-CIDI for panic disorder in the NSAL black and NCS-R white sample by race/ethnicity and gender

	Total N	Lifetime			12 Months among lifetime						
		n	%	SE (%)	F test	p value	n	%	SE (%)	F test	p value
Race/ethnicity											
African Americans	3,431	132	3.5	0.3	5.81	0.004	93	2.3	0.3	0.21	0.79
Caribbean blacks	1,585	46	4.1	1.2			28	2.7	1.6		
Non-Hispanic whites	6,696	333	4.8	0.2			176	2.6	0.2		
Total	11,712	511	4.6	0.2			297	2.6	0.2		
Gender											
Male	4,926	153	3.2	0.3	25.99	<0.000	79	1.6	0.2	34.58	<0.000
Female	6,786	358	5.9	0.3			218	3.4	0.3		
Total	11,712	511	4.6	0.2			197	2.6	0.2		

Reported n's represent unweighted frequencies. All prevalence estimates are weighted to be nationally representative of the given population and subpopulations in the coterminous 48 states of the USA. Standard errors and F statistics are adjusted for the sampling stratification, clustering, and weighting of the data

WMH-CIDI World Mental Health Composite International Diagnostic Interview, NCS-R National Comorbidity Survey Replication, NSAL National Survey of American Life

Table 3

Comorbidity of CIDI/DSM-IV panic disorder with other disorders by race/ethnicity

	Total PD sample				African Americans				Caribbean blacks				Non-Hispanic whites				Race differences	
	Freq.	Row (%)	SE (%)		Freq.	Row (%)	SE (%)		Freq.	Row (%)	SE (%)		Freq.	Row (%)	SE (%)		F test	p value
Lifetime anxiety disorder other than PD*																	0.7	0.4522
No	194	37.0	1.9		51	38.3	4.7		23	50.9	7.5		120	36.8	2.0			
Yes	317	63.0	1.9		81	61.7	4.7		23	49.1	7.5		213	63.2	2.0			
Lifetime agoraphobia																	2.5	0.1058
No	416	79.4	2.2		112	84.8	3.7		43	95.6	3.0		261	78.7	2.4			
Yes	95	20.6	2.2		20	15.2	3.7		3	4.4	3.0		72	21.3	2.4			
Lifetime social phobia																	2.4	0.1153
No	336	63.0	1.6		94	71.4	5.0		37	67.7	7.1		205	62.1	1.7			
Yes	175	37.0	1.6		38	28.6	5.0		9	32.3	7.1		128	37.9	1.7			
Lifetime general anxiety																	10.7	0.0003
No	367	66.4	3.2		111	84.2	3.9		37	89.3	5.9		219	64.4	3.5			
Yes	144	33.6	3.2		21	15.8	3.9		9	10.7	5.9		114	35.6	3.5			
Lifetime posttraumatic stress																	1.5	0.2262
No	372	73.8	2.5		89	70.3	4.5		31	56.1	7.5		252	74.3	2.8			
Yes	139	26.2	2.5		43	29.7	4.5		15	43.9	7.5		81	25.7	2.8			
Any lifetime mood disorder																	2.0	0.1331
No	274	51.9	3.1		76	59.5	4.0		27	69.9	14.2		171	50.9	3.4			
Yes	237	48.1	3.1		56	40.5	4.0		19	30.1	14.2		162	49.1	3.4			
DSM-major depression**																	2.1	0.1281
No	333	64.2	2.6		91	72.8	4.8		32	80.9	12.4		210	63.2	2.8			
Yes	178	35.8	2.6		41	27.2	4.8		14	19.1	12.4		123	36.8	2.8			
Lifetime eating disorder																	9.3	0.0003
No	456	93.0	1.1		106	83.0	3.7		40	88.7	8.2		310	94.1	1.1			
Yes	55	7.0	1.1		26	17.0	3.7		6	11.3	8.2		23	5.9	1.1			
Lifetime substance disorder																	0.0	0.9950
No	371	72.7	3.1		97	72.8	4.4		35	71.6	12.4		239	72.7	3.4			
Yes	140	27.3	3.1		35	27.2	4.4		11	28.4	12.4		94	27.3	3.4			

Total PD sample			African Americans			Caribbean blacks			Non-Hispanic whites			Race differences	
Freq.	Row (%)	SE (%)	Freq.	Row (%)	SE (%)	Freq.	Row (%)	SE (%)	Freq.	Row (%)	SE (%)	F test	p value
Any lifetime disorder other than PD													
No	82	17.9	2.0	16	12.6	3.7	9	31.8	10.6	57	18.2	0.4	0.6123
Yes	414	82.1	2.0	105	87.4	3.7	33	68.2	10.6	276	81.8		

Reported frequencies are unweighted. All prevalence estimates are weighted to be nationally representative of the given population and subpopulations in the coterminous 48 states of the USA. Standard errors and χ^2 statistics are adjusted for the sampling stratification, clustering, and weighting of the data

CIDI Composite International Diagnostic Interview, NSAL National Survey of American Life, NCS-R National Comorbidity Survey Replication

* OCD is not in public CPES data

*** DSM-IV major depressive disorder with hierarchy

Table 4
Multivariate socio-demographic predictors of lifetime and 12-month panic disorder within race/ethnicity

	Total sample		African Americans		Caribbean Blacks		Non-Hispanic whites	
	Lifetime (<i>n</i> = 11,712)	12 Months (<i>n</i> = 11,712)	Lifetime (<i>n</i> = 3,602)	12 Months (<i>n</i> = 3,431)	Lifetime (<i>n</i> = 1,710)	Lifetime (<i>n</i> = 6,696)	12 Months (<i>n</i> = 6,696)	
Race/ethnicity								
African Americans	0.4 (0.3–0.5)***	0.4 (0.3–0.6)***	N/A	N/A	N/A	N/A	N/A	
Caribbean blacks	0.5 (0.3–0.9)*	0.5 (0.1–2.1)	N/A	N/A	N/A	N/A	N/A	
Non-Hispanic whites	1.0	1.0	N/A	N/A	N/A	N/A	N/A	
Age (years)								
18–34	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
35–54	1.4 (1.1–1.9)*	1.1 (0.7–1.7)	1.2 (0.6–2.2)	1.3 (0.6–2.9)	3.4 (1.1–10.0)*	1.4 (1.0–1.9)	1.1 (0.7–1.7)	
55+	0.6 (0.4–0.9)**	0.4 (0.2–0.6)***	0.3 (0.1–0.8)*	.3 (0.1–0.9)*	0.8 (0.1–6.5)	0.6 (0.4–0.9)*	0.4 (0.2–0.7)**	
Sex								
Male	0.6 (0.5–0.8)***	0.5 (0.4–0.7)***	0.6 (0.4–1.1)	.5 (0.3–0.9)*	1.5 (0.4–5.0)	0.6 (0.5–0.8)***	0.5 (0.4–0.8)***	
Female	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Employment status								
Employed	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Unemployed	1.0 (0.6–1.8)	0.6 (0.3–1.2)	1.1 (0.5–2.2)	1.4 (0.7–2.7)*	0.4 (0.9–1.5)	1.0 (0.5–2.1)	0.4 (0.1–1.4)	
Not in labor force	1.3 (1.0–1.6)	1.5 (1.2–2.0)**	2.0 (1.1–3.6)*	2.2 (1.3–3.8)**	2.5 (0.9–7.0)	1.2 (0.9–1.6)	1.5 (1.1–2.0)*	
Education	1.0 (0.98–1.1)	1.0 (0.9–1.0)	1.0 (0.9–1.1)	1.0 (0.9–1.2)	0.8 (0.8–1.0)***	1.03 (0.99–1.1)	1.0 (0.9–1.1)	
Marital status								
Divorced/separated/widowed	1.5 (1.1–2.0)***	2.1 (1.5–3.1)***	1.1 (0.7–2.0)	1.7 (0.8–3.7)	1.1 (0.2–5.7)	1.6 (1.1–2.1)***	2.1 (1.5–3.1)***	
Never married	0.9 (0.6–1.4)	1.1 (0.7–1.6)	0.9 (0.5–1.5)	1.0 (0.6–1.9)	3.7 (1.4–9.7)*	0.9 (0.5–1.2)	1.0 (0.6–1.7)	
Married/partner	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Income categories								
Poverty line or lower	1.7 (1.1–2.6)*	1.8 (1.0–3.2)	0.8 (0.3–2.1)	0.5 (0.2–1.4)	3.6 (0.5–29.0)	1.7 (1.0–2.8)*	1.9 (0.9–3.7)	
1× to 3× Poverty line	1.2 (0.8–1.6)	1.4 (0.9–2.2)	0.4 (0.2–1.1)	0.3 (0.1–0.8)*	2.0 (0.4–0.9)	1.2 (0.8–1.7)	1.5 (0.9–2.4)	
3× to 6× Poverty line	1.2 (0.8–1.7)	1.1 (0.7–1.7)	0.3	0.1 (0.0–0.6)*	1.0 (0.2–6.8)	1.2 (0.8–1.8)	1.2 (0.7–2.0)	
6× Poverty line	1.0	1.0	1.0	1.0	1.0	1.0	1.0	

Data are reported as odds ratio (95 % confidence interval)

The 95 % confidence intervals have been adjusted for stratification, clustering and weighting of the data. All logistic regression models controlled for region. Country of origin and Nativity were controlled in the Caribbean Black logistic regression model of lifetime PD 12-Month results for Caribbean blacks were not reported due to low sample size ($n = 28$ met criteria)

* $p < 0.05$ by a two-sided test;

** $p = <0.01$ level;

*** $p < 0.001$ level

Table 5

Functional impairment scores (WHO-DAS) of those with 12-month panic disorder

Variables ^a	Mean (CI)		Race difference			
	Total PD sample	African Americans	Caribbean blacks	Non-Hispanic whites	F test	p value
Time out of role	32.7 (27.2–38.2)	44.7 (34.7–54.6)	39.7 (23.2–56.1)	31.1 (24.9–37.3)	2.78	0.07
Role impairment	16.4 (12.5–20.3)	15.3 (11.5–19.2)	7.8 (3.1–12.5)	16.6 (12.3–20.9)	4.35	0.02
Cognition	6.6 (4.4–8.7)	10.6 (7.1–14.0)	21.0 (7.0–35.0)	5.9 (3.5–8.3)	4.22	0.02
Mobility	13.2 (8.8–17.8)	15.3 (10.6–20.0)	25.6 (9.5–41.6)	12.9 (7.8–18.1)	1.17	0.31
Self-care	1.8 (1.0–2.6)	3.8 (2.1–5.6)	16.0 (4.3–27.7)	1.4 (0.5–2.2)	6.21	0.00
Social	4.8 (3.3–6.2)	7.3 (4.0–10.5)	17.5 (7.6–27.4)	4.3 (2.7–5.9)	4.39	0.02

All mean estimates are weighted to be nationally representative of the given population and subpopulations in the Coterminous 48 states of the US Confidence limits and t-statistics are adjusted for the sampling stratification, clustering, and weighting of the data All *t* tests were two-sided

CL confidence limit

^aWHO-DAS scores ranging from 0 to 100 are reported where 100 represents severely impaired and 0 represents no impairment

Table 6

Sheehan Disability Severity for 12-month panic disorder

Severity of mental illness	Total PD sample			African Americans			Caribbean blacks			NCS-R whites			Race/ethnic differences	
	Freq.	%	Std. error (%)	Freq.	%	Std. error (%)	Freq.	%	Std. error (%)	Freq.	%	Std. error (%)	F test	p value
Mild	71	28.4	3.2	13	15.7	4.1	9	43.7	6.5	49	29.9	3.6	2.00	0.12
Moderate	70	23.9	4.2	29	27.5	5.2	5	12.2	9.8	36	23.5	4.7		
Severe, serious	134	47.7	4.2	46	56.8	6.2	12	44.2	5.8	76	46.5	4.7		

Reported frequencies are unweighted. All prevalence estimates are weighted to be nationally representative of the given population and subpopulations in the coterminous 48 states of the USA. Standard errors and F statistic are adjusted for the sampling stratification, clustering, and weighting of the data

Severity of PD was defined as

Severe if any of the Answers to Questions PD44 a–d are greater than or equal to 7, *moderate* if the greatest score to Questions PD44 a–d is 4 or 5 or 6, *mild* if the scores to Questions PD44 a–d are all less than or equal to 3

Table 7

12-Month panic disorder and 12-month service use

	Total PD sample (n = 297)			African Americans (n = 93)			Caribbean blacks (n = 28)			NCSR whites (n = 176)			Race differences	
	Freq.	%	SE (%)	Freq.	%	SE (%)	Freq.	%	SE (%)	Freq.	%	SE (%)	F test	p value
Any treatment	149	59.1	3.0	33	39.6	6.0	11	44.0	6.4	105	61.8	3.3	9.74	0.001
Health services	128	52.9	3.1	27	32.5	6.5	8	41.5	7.2	93	55.6	3.4	8.39	0.003
Mental health specialist	88	34.8	2.9	17	20.9	5.1	6	9.1	7.6	65	36.9	3.2	5.37	0.009
Gen med professional	88	38.9	4.1	19	20.3	5.2	5	34.9	10.1	64	41.3	4.5	6.6	0.006

Service use is defined as seeking services for emotions, nerves, mental health, and/or drug problems

Reported frequencies are unweighted. All prevalence estimates are weighted to be nationally representative of the given population and subpopulations in the coterminous 48 states of the USA. Standard errors and F statistic are adjusted for the sampling stratification, clustering, and weighting of the data