The current study investigates race-ethnic differences in rates of panic disorder, panic attacks and certain panic attack symptoms by jointly combining three major national epidemiological databases. The compared groups were White, African American, Latino and Asian. The White group had significantly higher rates of panic disorder, and of many panic symptoms, including palpitations, as compared to the African American, Asian and Latino groups. Several expected race-ethnic differences were not found. An explanation for these findings are adduced, and suggestions are given for future studies so that possible ethnic-racial differences in panic disorder, panic attacks and panic attack symptoms can be investigated in a more rigorous manner.

Introduction

Researchers have hypothesized that the rate of panic disorder, panic attacks and panic attack symptoms may vary across race-ethnic groups for several reasons [1]. In particular, cultural ideas about the meaning of anxiety-type psychological and somatic sensations (such as those listed in the DSM–IV panic attack criteria) may vary across cultures. Consequently, the feared sensations and the extent of fear would be expected to vary and would seemingly result in different rates of panic disorder and panic attacks. Consequentially, this would result in certain symptoms being more prominent during panic attacks [1]. Possible reasons for cross-cultural differences in the meaning and emotional salience of panic attack symptoms are reviewed, otherwise known as cultural reasons for “somatic symptom amplification” [1].

For one, it has been theorized that certain racial groups may be susceptible to certain symptoms owing to biological reasons; for instance, studies using an optokinetic drum have observed that Asian groups may be more predisposed to motion sickness and dizziness. Of course, this motion sickness predisposition may result from the cultural meaning of dizziness, for example, associated metaphors, rather than a genetic predisposition, or a combination of both; see [1] for a review of this topic. Second, it has been theorized that if a certain somatic symptom is linked to many metaphors used to express distress, then that symptom may take on particular emotional salience. For example, Hispanic populations will be very afraid of shortness of breath, owing to many metaphors referencing asphyxia [D.E. Hinton, R. Lewis-Fernández, R. Chong, M.H. Pollack, submitted manuscript].

Third, it has been theorized that if a group has a high rate of an illness that has a certain panic attack symptom as the key symptom, then that symptom may be misattributed to that disease process; for instance, in the African American group, there is a very high rate of diabetes, hypertension and foot amputation, therefore numbness is greatly feared as an indicator of these problems [2,3]. As another example, among English speaking populations in the United States, there is great fear of heart attacks, so in theory heart palpitations should be emphasized during panic attacks [4]. Finally, cultures may have certain greatly feared cultural syndromes,
The NSAL, an integrated household probability sample survey (N = 6199), consists of 3570 African–Americans, 1006 non-Hispanic Whites, and 1623 African American adults of Caribbean descent, with a response rate of 71.5%. The inclusion and exclusion criteria for the NSAL were identical to those of the NCS-R described previously. Moreover, this survey was added to the CPES combined dataset in order to obtain information from Afro-Caribbean adults, a group that was not represented in the NCS-R. A similar three-stage national area probability sampling procedure as employed in the NCS-R was utilized to collect the data.

The NLAAS, a nationally representative survey of Latino and Asian Americans residing in the United States, included individuals whose primary language was English, Spanish, or 1 of 3 Asian languages (Chinese, Vietnamese or Tagalog). Of note, this was the only survey in the CPES combined dataset that utilized trained bilingual interviewers to conduct the full assessment in one of these five languages, as compared to English-only assessments in the NCS-R and NSAL [8]. Moreover, the NLAAS survey population included Latino and Asian–American adults (≥ 18 years old), in the coterminous United States, Alaska and Hawaii. Exclusion criteria were the same as for the NCS-R and the NSAL. Additionally, the study utilized a similar three-stage national area probability sample with special supplements for adults of Puerto Rican, Cuban, Chinese, Filipino and Vietnamese origin. The Latino sample (n = 2554) consisted of four ethnic subgroups determined by respondents’ self-reported ethnicity: Cuban, Puerto Rican, Mexican and other; the final weighted response rate for the Latino sample was 75.5% [9]. The Asian sample consisted of individuals identifying as Chinese, Filipino, Vietnamese or other Asian ancestry (n = 2095); the combined weighted response rate for the Asian sample was 65.6% [10].

Across the three surveys, study procedures were explained to all participants and written informed consent was obtained from the respondents in their preferred language [9]. Trained interviewers conducted face-to-face interviews with all participants in the core and high-density samples (see subsequently), except when a telephone interview was conducted by the respondent. To ensure quality control in each survey, participants were randomly recontacted to validate the data. An initial $50 incentive was later increased to $150 to address nonresponse [10].

The sampling procedure for all three surveys [5,9] included three stages: 1) core sampling, in which primary sampling units (metropolitan statistical areas or county units) and secondary sampling units (continuous groupings of census blocks) were selected with probability proportionate to size; 2) high-density supplemental
Annual household income mean (SD) $59,479 (46.739)
Age Mean (SD) 46.65 (17.73)

significant post hoc group differences at

Characteristics Americans Americans Americans Americans (df
effect
comparisons: Whites versus Asian Americans, Whites versus
Hispanics, Whites versus African Americans, African
Africans versus Hispanics, African Americans versus
Asian Americans and Hispanics versus Asian Americans.
Three covariates were included in the final analyses: age, gender and annual household income. Education
was considered as a potential fourth covariate, but
seemed redundant to include in the analyses given its
significant positive correlation to annual household
income level in the datasets. One-way analysis of variances
(ANOVA) were also conducted for these six race com-
parisons to determine differences in number of past-year
and lifetime panic attacks experienced between racial
groups.

Results
The demographic characteristics of each of the four
racial groups are depicted in Table 1. The White
sample was older (M = 46.85) than all other racial groups,
whereas the African American cohort consisted of the
highest proportion of women (63.2% female) among the
groups. Asian Americans had the highest average level
of household income ($72,878) in comparison to the
other groups. As shown in Table 1, each demographic
variable was found to be significantly different across all
racial groups. To account for this, these demographic vari-
ables were entered as covariates in the logistic regression
analysis.

Table 2 shows the comparisons of odds ratios between
the different ethnic groups in diagnosis of panic disorder
when controlling for gender, age and socioeconomic sta-
tus. As shown, White Americans endorsed significantly
higher rates of panic disorder as compared African Amer-
icans, Hispanic Americans and Asian Americans. There
were no differences, however, in prevalence of PD among
the three minority groups. These differences in the re-
porting of panic disorder symptoms remained significant
after a Bonferroni correction (P < 0.05/3). The logistic
regressions revealed that even after controlling
for demographic variables the four racial groups endorsed
specific symptoms of panic at significantly differential

Table 1 Demographic variables of the racial groups

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>White Americans</th>
<th>African Americans</th>
<th>Hispanic Americans</th>
<th>Asian Americans</th>
<th>χ² (4) or F-values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample size</td>
<td>7587</td>
<td>6238</td>
<td>3620</td>
<td>2284</td>
<td>—</td>
</tr>
<tr>
<td>Gender (% females)</td>
<td>54.53%</td>
<td>63.19%</td>
<td>55.80%</td>
<td>52.63%</td>
<td></td>
</tr>
</tbody>
</table>

The table shows number, percentages, means and standard deviations (SD), with corresponding F or chi square (χ²) values. Different subscripts indicate significant post hoc group differences at P < 0.05.

sampling to oversample census block groups with 5%
or greater density of target ancestry groups; 3) second
respondent sampling to recruit participants from house-
holds in which one eligible member has already been
interviewed. To take into account the joint probabili-
ties for selection under the three components of the
sample design, weighting correlations were developed
[10].

Measures
The World Mental Health Psychiatric Survey Ini-
tiative Version of the World Health Organiza-
tion Composite International Interview (WMH-
CIDI), a fully structured lay-administered diag-
nostic interview that generates DSM-IV diagnoses
was used to evaluate disorder prevalence rates [9]. Ear-
lier versions of the English and Spanish CIDI diagnostic
assessments were consistent with the independent diag-
nosis made by trained clinical interviewers [11,12]. In
the current investigation we examine lifetime prevalence
rates for Panic Disorder for each of four race-ethnic
groups: the Asian American subgroup (n = 2284), con-
sisting of respondents identifying as Chinese, Filipino or
Vietnamese; the African American subgroup (n = 6238),
which included all origins including Caribbean African;
the Hispanic subgroup (n = 3620), which included all
individuals of Hispanic descent; and the White subgroup
(n = 7587). We also examined the panic attack symptom
profiles and number of lifetime and past-year panic
attacks across the four race-ethnic groups.

Statistical Analysis
The complex samples module of SPSS 17.0 was used
to complete all analyses for the present report, in order
to adequately address the weighted nature of the CPES
data as described previously. Logistic regressions (odds
ratios with 95% confidence intervals) were conducted
for prevalence of lifetime DSM-IV diagnosis of panic dis-
order and all 16 panic symptoms across six race com-
parisons: Whites versus Asian Americans, Whites versus

Table 3: Comparison between racial groups in occurrence of panic symptoms

<table>
<thead>
<tr>
<th></th>
<th>White versus African Americans</th>
<th>White versus Hispanic Americans</th>
<th>White versus Asian Americans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart racing</td>
<td>1.00 (0.37–3.14)</td>
<td>1.27 (0.98–1.65)</td>
<td>1.57 (1.21–2.04)</td>
</tr>
<tr>
<td>Shortness of breath</td>
<td>0.96 (0.76–1.23)</td>
<td>1.26 (0.96–1.68)</td>
<td>1.49 (1.18–1.89)</td>
</tr>
<tr>
<td>Nausea</td>
<td>0.82 (0.64–1.04)</td>
<td>1.02 (0.82–1.29)</td>
<td>1.30 (1.13–1.49)</td>
</tr>
<tr>
<td>Dizziness</td>
<td>1.13 (0.83–1.55)</td>
<td>1.13 (0.83–1.55)</td>
<td>1.13 (0.83–1.55)</td>
</tr>
<tr>
<td>Sweating</td>
<td>1.02 (0.82–1.27)</td>
<td>1.02 (0.82–1.27)</td>
<td>1.02 (0.82–1.27)</td>
</tr>
<tr>
<td>Trembling/shaking</td>
<td>1.43 (1.18–1.79)</td>
<td>1.43 (1.18–1.79)</td>
<td>1.43 (1.18–1.79)</td>
</tr>
<tr>
<td>Dry mouth</td>
<td>1.43 (1.18–1.79)</td>
<td>1.43 (1.18–1.79)</td>
<td>1.43 (1.18–1.79)</td>
</tr>
<tr>
<td>Choking</td>
<td>1.27 (0.96–1.65)</td>
<td>1.27 (0.96–1.65)</td>
<td>1.27 (0.96–1.65)</td>
</tr>
<tr>
<td>Chest discomfort</td>
<td>1.02 (0.82–1.27)</td>
<td>1.02 (0.82–1.27)</td>
<td>1.02 (0.82–1.27)</td>
</tr>
<tr>
<td>Lose control</td>
<td>1.13 (0.83–1.55)</td>
<td>1.13 (0.83–1.55)</td>
<td>1.13 (0.83–1.55)</td>
</tr>
<tr>
<td>Depersonalization</td>
<td>1.22 (0.83–1.80)</td>
<td>1.22 (0.83–1.80)</td>
<td>1.22 (0.83–1.80)</td>
</tr>
<tr>
<td>Derealization</td>
<td>1.36 (0.82–2.24)</td>
<td>1.36 (0.82–2.24)</td>
<td>1.36 (0.82–2.24)</td>
</tr>
<tr>
<td>Passing out</td>
<td>1.10 (0.64–1.89)</td>
<td>1.10 (0.64–1.89)</td>
<td>1.10 (0.64–1.89)</td>
</tr>
<tr>
<td>Fear of death</td>
<td>1.07 (0.64–1.89)</td>
<td>1.07 (0.64–1.89)</td>
<td>1.07 (0.64–1.89)</td>
</tr>
<tr>
<td>Hot flushes</td>
<td>1.02 (0.64–1.89)</td>
<td>1.02 (0.64–1.89)</td>
<td>1.02 (0.64–1.89)</td>
</tr>
<tr>
<td>Numbness</td>
<td>0.69 (0.37–1.40)</td>
<td>0.69 (0.37–1.40)</td>
<td>0.69 (0.37–1.40)</td>
</tr>
</tbody>
</table>

The table shows odds ratios (OR), 95% confidence intervals (CI), and the statistical significance level comparing the first group versus the second group; ns = not significant at P < 0.05; * = significant at P = 0.05; ** = significant after a Bonferroni correction of 0.05/6 = 0.008; PD = panic disorder. All analyses include gender, age and socioeconomic status as covariates.

Discussion

In this study, the White group had the highest rate of both panic disorder and panic attacks, and the Asian group the lowest. In general, the White group had a higher rate of
endorsement of panic attack symptoms. As hypothesized, the White group had a very high rate of palpitations, in keeping with prominence of cardiac concerns, especially heart attack, in that group, as well as the prominence of heart-related metaphors in the English language [4].

Why might the White group have the higher rate of panic disorder? For one, there is an elevated fear of disease entities like heart attack and stroke in the American culture, which could create a hypervigilance to these symptoms, and a fearful reaction to them. As another explanation, panic disorder may be a well-known entity in the United States (e.g., it is featured in the very popular television mini-series “The Sopranos”), and this may increase its frequency through modeling and it serving as an “idiom of distress” [13].

There are several reasons that expected race-ethnic differences in symptom frequency might not have been observed, such as the expectation that shakiness and shortness of breath would be more common in the Latino group, numbness in the African American group and dizziness in the Asian group. Most particularly, regarding the cultural theory of somatic symptom amplification, the sample had serious shortcomings. (As reviewed previously, according to the cultural theory of somatic symptom amplification, the cultural meanings of a somatic symptom, such as metaphors or cultural syndromes associated with that somatic symptom, increase the somatic symptom’s prominence in that culture [1].) Specifically, the datasets did not indicate the degree of acculturation of all the race-ethnic groups; therefore, this variable could not be examined across all groups. Thus, it may be that many participants surveyed may have been highly acculturated. An array of other variables (such as number of years in the United States, citizenship status and subjective feeling of affinity towards the United States) were considered as potential proxies for this measure, but none of these were systematically assessed across all three datasets for all racial groups. As a more serious problem, the symptoms were not assessed in each group’s language across all three datasets. Furthermore, although the assessments were at least conducted in five different languages to participants in the NLAAS survey, the members within each racial group are not homogenous: African Americans in the South versus African Americans of Caribbean origin; Mexican-Americans versus Puerto Ricans (e.g., Puerto Ricans have much higher rates of anxiety disorders than Mexican-American populations; [9]) and three Asian groups in the datasets. The literature documents extensive translation and back-translation methods to ensure cultural equivalency of the symptom measures in the Latino subgroups in the NLAAS [14], but similar descriptions are not available for the Asian subgroups (of Chinese, Filipino and Vietnamese origin), all of whom have extremely different languages and cultures.

Despite these limitations, there are several strengths to the current study. The large sample size within the CPES allows for results that are widely generalizable to the overall U.S. adult population. Moreover, the over sampling of Mexicans, Puerto Ricans, Cubans, Chinese, Filipinos, Vietnamese and persons of Afro-Caribbean origin enhances knowledge in a portion of the population that is widely understudied and therefore provides robust information about how symptoms are handled across different races and cultures. As noted previously [5], this methodological design produced increased population response weights and therefore may have reduced non-response bias in this dataset. Taken together, the CPES offers a rich opportunity to investigate race-ethnic differences in the rates of a number of emotional symptoms in a widely generalizable sample.

Future cross-cultural studies of rates of panic disorder, panic attacks and panic attack symptoms should include a scale of acculturation; should assess the group in question in their own language; and should assess specific subgroups (African American versus Caribbean African American; Filipino versus Chinese). In addition, it should be noted that the current study assessed severity of symptoms, not the most feared symptoms. One would expect that fear of symptoms would much better illustrate cross-cultural differences in symptom meaning [15]. It might also be useful in future studies to utilize measures of fear of anxiety symptoms that are thought to be predictive of panic attacks, such as the Anxiety Sensitivity Index (ASI), to determine whether differences exist and whether those differences predict difference in rates of panic attacks and panic disorder [15].

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Conflict of Interest
The authors have no conflict of interest.

References


