Gender differences in exposure to potentially traumatic events and diagnosis of posttraumatic stress disorder (PTSD) by racial and ethnic group

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ABSTRACT

Objective: There is a robust literature base documenting gender differences and racial/ethnic differences in exposure to potentially traumatic events (PTEs) and posttraumatic stress disorder (PTSD) diagnosis. Yet, to the best of our knowledge, this is the first study to evaluate the risk of PTEs and PTSD between genders, stratified by race/ethnicity. We aimed to better understand whether factors associated with poor psychological adjustment following PTEs (e.g., PTE type, sociodemographic factors, social support) varied by gender and race/ethnicity.
Method: Data were collected from three U.S.-based national studies comprising the Collaborative Psychiatric Epidemiologic Surveys (CPES; *N* = 13,649). Trained lay interviewers administered questionnaires and collected data on PTE exposure, PTSD, and psychosocial covariates. Regression analyses were conducted to investigate relations between PTEs, PTSD, and gender, stratified by race/ethnicity.
Results: Adjusting for sociodemographic variables, mental health comorbidity, social support, and PTE frequency, White, African-American, and Afro-Caribbean women had higher odds of PTSD than men in their respective racial/ethnic groups, whereas gender differences were not observed for Latinos or Asians.
Conclusion: Findings suggest that risk of exposure to PTEs and PTSD may differ by gender and race/ethnicity. Future studies should consider the contributions of social, cultural, and contextual factors in estimating PTSD risk.

1. Introduction

Exposure to a potentially traumatic event (PTE) is reported by 89.7% of U.S. adults [1]. A PTE is defined in the Diagnostic and Statistical Manual of Mental Health Disorders (DSM-5) as experiencing, witnessing, or learning about actual or threatened physical injury, sexual violation, or death [2], and a necessary diagnostic criterion for posttraumatic stress disorder (PTSD). However, most individuals exposed to PTEs do not go on to develop PTSD, as lifetime prevalence estimates among U.S. adults is 8.7% [2]. There is evidence that PTEs and PTSD are not equally distributed across the U.S. population [3,4]. Prevalence rates of PTEs and PTSD vary by gender, with adult men reporting exposure to a higher number of PTEs than women [5–7], yet

women have double the odds of PTSD relative to men, even when controlling for PTE type [6–8]. Epidemiologic data from structured diagnostic interviews also suggest that prevalence rates in the U.S. vary by race and ethnicity, with PTSD rates highest among Black adults (9%), followed by Whites and Latinos (7.4%, 7%, respectively), and lowest among Asians (4%) [4]. Other U.S. studies have reported differences among Blacks, wherein PTE-exposed African-Americans, but not Afro-Caribbeans, had higher PTSD risk compared to Whites [9].

Several theories have been posited to explain gender differences in PTSD prevalence. First, there is variance in type of PTE. Women are more likely to report exposure to PTEs of a sexual nature than men [6,7,10], whereas men are more likely to report exposure to serious accidents, assault, combat, and disaster [6,7]. However, PTE type does

not fully explain gender differences. Although rape and sexual assault may be the most pathogenic in terms of PTSD [1,11], one study [7] that relied on structured clinical interviews found women were still more likely to have PTSD relative to men who experienced the same PTE type.

Observed gender and racial/ethnic disparities in health can be understood in terms of risk factors that are both universal (general stressors) and specific to socially disadvantaged groups (socially-produced stressors; i.e., discrimination). Thus, observed health differences are the presumed result of the cumulative burden of stressors. Numerous studies have documented that women (v. men) [12,13] and racial/ethnic minorities (v. Whites) experience more cumulative life stress [14]. Mental health comorbidity, an additional burden, may help to explain gender and racial/ethnic differences in PTSD prevalence [15]. There is combined evidence suggesting that (a) pre-existing mood and anxiety disorders are a risk factor for PTSD [5,16,17], and (b) there are gender and racial/ethnic differences in mood and anxiety disorders [18–25].

Important contextual factors also vary by PTE type and may help explain group differences in PTSD. Blacks and Latinos (v. Whites) are more likely to report PTEs of an interpersonal nature [4]. Studies also suggest that there may be racial or ethnic differences in how one may respond behaviorally, cognitively, and affectively following exposure to PTEs [26–35]. For example, there are racial/ethnic differences in willingness to disclose stigmatizing events, such as child maltreatment and sexual assault [26–29]. In addition, racial/ethnic minorities may be more likely to use avoidant coping [30–35], such as trauma memory suppression, which could place these groups at elevated risk of PTSD [36].

Although previous studies [3–9] have examined gender and racial/ethnic differences in PTE exposure and PTSD, to the best of our knowledge, none have stratified gender differences by race/ethnicity. This is an important area for research, as risk for PTSD for individuals with dual social disadvantages (woman, racial/ethnic minority) is not well understood. Yet, we imagine that racial/ethnic minority women may experience a higher burden of stressors relative to those with a single disadvantaged status. The current study used data from a nationally-representative sample of individuals living in the U.S. to: 1) evaluate the risk of exposure to PTEs and lifetime PTSD among women relative to men, and 2) determine if gender differences could be accounted for by type of PTE exposure and other empirically-supported sociodemographic and psychosocial risk factors. We stratified results by racial/ethnic groups. We hypothesize that 1) there will be gender differences in type of PTE exposure, and these will differ across racial/ethnic groups; and 2) women will have higher risk of PTSD than men.

2. Methods

2.1. Participants and procedure

Data from 13,649 participants were collected from three studies comprising the Collaborative Psychiatric Epidemiologic Surveys (CPES): the National Latino and Asian American Study (NLAAS) [37], the National Survey of American Life (NSAL) [38], and the National Comorbidity Survey Replication (NCS-R) [39]. All surveys were administered to a sample of non-institutionalized adults (18 years or older) who resided in U.S. households located in the 48 conterminous states. Data collection was conducted by the Survey Research Center of the Institute for Social Research at the University of Michigan from 2001 to 2003 [40]. Each study used the same sampling procedures and core questionnaire with the intention of being combined together for later analyses [40]. All surveys were based on multi-stage clustered area probability household samples [41,42], with nested samples conducted in the following order: 1) Metropolitan Statistical Areas (MSAs) and counties, 2) area segments within selected MSAs and counties, 3) housing units within selected area segments, and 4) eligible respondents within selected housing units.

The NLAAS oversampled areas with large concentrations of Latinos and Asians, the NSAL oversampled areas with large concentrations of African-Americans and Afro-Caribbeans, and the NCS-R sampled English-speaking household residents irrespective of race/ethnicity. To create the samples, an adaptation of a multiple-frame approach to estimation and inference for population characteristics was used to select, merge, and generate a single, nationally-representative study using design-based analysis weights [9,43,44]. Questionnaires were administered by trained lay interviewers utilizing a computer assisted personal interview (CAPI). Informed consent was obtained [45], and interviews were conducted in English, Spanish, Mandarin, Cantonese, Tagalog, or Vietnamese [40]. Recruitment, consent, and procedures were approved by participating institutions.

2.2. PTEs and probable PTSD

Participants were first asked whether they had experienced items on a list of 27 PTEs, and two open-ended questions that included any other event not in the list or any "private" event the respondent did not want to disclose. Affirmative answers were followed by questions regarding the number of occurrences of each PTE type, and whether the event led to problems such as "upsetting memories or dreams, feeling emotionally distant or depressed, trouble sleeping or concentrating, and feeling easily startled" [38]. These PTEs were further classified into eleven groups: combat experiences, political violence, victimization, personal violence, assault, loss, witnessing violence, accident, disaster, illness, and other.

PTSD diagnosis was evaluated using the World Mental Health Composite International Diagnostic Interview from the World Health Organization (WHO WMH-CIDI) [46], a fully structured diagnostic interview based on Diagnostic and Statistical Manual(DSM-IV-TR) criteria [47]. PTSD diagnosis was based on evaluation of a participant's reaction to their self-identified "worst" event, and this approach may slightly overestimate lifetime prevalence [48]. Although the WHO WMH-CIDI performs well in identifying PTSD negative cases for Latinos, it may identify fewer PTSD positive cases than the clinician-administered Structured Clinical Interview (SCID) [49] when later administered by blinded raters on the same event [50]. Specifically, the WHO WMH-CIDI [51,52], including the PTSD module [53], may lead to greater false negatives than false positives. A pattern of denying previously reported PTEs upon re-interview has also been observed in less acculturated immigrant and refugee populations [54]. That said, the WHO WMH-CIDI has been shown to have good test-retest [55] and inter-rater [56] reliability, and good agreement with the PTSD Checklist [57], and low-to-moderate agreement with the SCID [3,58]. Because the PTSD module has demonstrated fair-to-moderate concordance with the SCID (AUC = 0.6–0.7) [53], we believe it provides a reasonable PTSD assessment.

2.3. Additional diagnostic assessment

2.3.1. Affective disorders

The WHO WMH-CIDI was used to assess lifetime affective (mood) disorders, including major depressive disorder, dysthymia, and bipolar disorder [46]. The WHO WMH-CIDI has been shown to have good test-retest [55] and inter-rater reliability [34] for depression, and moderate agreement with clinical diagnosis [53,59].

2.3.2. Substance use disorders

The WHO WMH-CIDI was used to assess lifetime substance use disorders, which included alcohol use or dependence and drug use or dependence. The WHO WMH-CIDI has been shown to have good test-retest reliability for alcohol dependence and moderate-to-good agreement with the Schedules for Clinical Assessment in Neuropsychiatry (SCAN) [60].

Table 1

Sociodemographic, clinical, and social support variables (CPES[a] long form sample that answered PTSD[b] section N = 13,649).

Variables	White		Latino		Asian		African-American		Afro-Caribbean	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
	N = 1802	N = 2378	N = 1127	N = 1427	N = 998	N = 1097	N = 1211	N = 2208	N = 549	N = 852
	%	%	%	%	%	%	%	%	%	%
Age category										
18–34 years	28.1%	27.2%	51.5%	46.3%	41.0%	38.0%	35.9%	36.9%	41.7%	38.2%
35–49 years	32.3%	28.8%	29.9%	30.2%	32.1%	32.3%	34.9%	33.1%	31.2%	34.5%
50–65 years	22.1%	23.6%	12.4%	14.4%	17.7%	18.4%	19.0%	18.1%	18.4%	16.6%
65+ years	17.5%	20.4%	6.1%	9.0%	9.2%	11.3%	10.2%	11.9%	8.7%	10.7%
χ^2	1.5		3.4*		0.8		1.0		0.5	
Born in U.S.										
U.S.-born	97.1%	96.3%	41.4%	41.6%	24.5%	21.7%	96.6%	98.4%	31.2%	35.5%
Immigrant	2.9%	3.7%	58.6%	58.4%	75.5%	78.3%	3.4%	1.6%	68.8%	64.5%
χ^2	1.0		0.0		1.2		10.5**		0.2	
Marital										
Married	59.2%	51.3%	55.6%	47.9%	65.2%	65.5%	40.4%	27.2%	45.9%	29.5%
Never married	25.0%	19.1%	32.1%	27.2%	28.1%	22.3%	36.9%	37.8%	38.9%	39.2%
Widowed/divorced/separated	15.8%	29.6%	12.4%	24.8%	6.7%	12.1%	22.7%	35.0%	15.2%	31.3%
χ^2	32.5***		26.9***		6.6**		43.5***		9.8***	
Education										
11 years or less	14.5%	11.7%	44.3%	44.7%	12.8%	17.2%	22.7%	25.3%	21.9%	19.9%
12 years	31.2%	31.7%	25.6%	23.3%	18.3%	17.1%	39.7%	36.0%	31.7%	28.9%
13–15 years	27.5%	30.5%	20.2%	21.5%	21.9%	28.3%	23.0%	24.7%	24.7%	30.8%
16 years or more	26.8%	26.1%	9.9%	10.5%	47.0%	37.4%	14.7%	14.0%	21.7%	20.5%
χ^2	1.6		0.6		5.7**		1.3		0.4	
Employment										
Employed	72.0%	59.2%	75.6%	50.6%	72.9%	55.7%	71.6%	63.4%	81.1%	73.2%
Unemployed	3.1%	6.8%	7.3%	7.6%	5.3%	7.4%	9.0%	11.3%	7.0%	10.0%
Out of labor force/other	24.9%	34.0%	17.1%	41.8%	21.8%	36.9%	19.4%	25.3%	12.0%	16.8%
χ^2	22.6***		75.6***		18.2***		8.5***		1.2	
Region										
Northeast	21.4%	20.8%	16.3%	20.9%	16.8%	14.6%	16.0%	16.2%	50.8%	62.5%
Midwest	29.0%	28.1%	8.7%	7.9%	10.0%	7.9%	16.0%	18.7%	4.6%	3.9%
South	29.9%	31.1%	31.2%	30.1%	6.4%	9.2%	57.3%	56.4%	32.1%	28.6%
West	19.6%	20.0%	43.8%	41.1%	66.8%	68.3%	10.7%	8.7%	12.5%	5.0%
χ^2	0.2		1.6		3.6*		1.5		5.7**	
Poverty										
Above poverty level	93.0%	89.3%	77.2%	68.2%	84.5%	80.6%	82.9%	70.8%	87.7%	83.0%
Below poverty level	7.0%	10.7%	22.8%	31.8%	15.5%	19.4%	17.1%	29.2%	12.3%	17.0%
χ^2	7.9**		12.5***		2.6		46.3***		1.9	
Urbanicity										
Non-metro counties	26.3%	27.7%	5.8%	3.9%	2.7%	4.1%	9.5%	11.8%	0.0%	0.0%
Metro counties	73.7%	72.3%	94.2%	96.1%	97.3%	95.9%	90.5%	88.2%	100.0%	100.0%
χ^2	1.1		15.6***		2.9		4.2*		–	
Lifetime affective disorder	16.5%	25.4%	11.2%	20.1%	8.3%	10.6%	9.0%	14.6%	15.1%	12.5%
χ^2	49.9***		25.5***		1.7		20.1***		0.3	
Lifetime substance use disorder	21.1%	9.2%	17.3%	4.8%	6.5%	1.7%	17.9%	6.4%	15.0%	2.9%
χ^2	153.0***		67.7***		19.6***		97.2***		15.2***	
Lifetime PTSD	3.6%	9.5%	3.2%	5.3%	1.4%	2.5%	5.1%	12.3%	6.1%	7.5%
χ^2	116.0***		7.7**		3.2		39.9***		0.2	
	M (SE)		M (SE)		M (SE)		M (SE)		M (SE)	
Family support	0.65 (0.01)	0.74 (0.01)	0.63 (0.01)	0.69 (0.01)	0.56 (0.01)	0.62 (0.02)	0.61 (0.01)	0.70 (0.01)	0.61 (0.02)	0.68 (0.01)
F	92.7***		19.0***		10.9**		57.2***		41.1***	
Friend support	0.66 (0.01)	0.73 (0.01)	0.52 (0.01)	0.55 (0.01)	0.56 (0.01)	0.58 (0.01)	0.64 (0.01)	0.66 (0.01)	0.66 (0.02)	0.68 (0.02)
F	28.5***		5.5*		1.9		7.3*		0.46	

[a] Collaborative Psychiatric Epidemiologic Surveys.

[b] Posttraumatic stress disorder.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

2.4. Social support

Social support is a known factor linked to risk of PTSD [61] and has been associated with reduced risk for poor adjustment among racial/ethnic minority groups [62–64]. We included social support in our analysis as it may buffer the negative effects of socially disadvantaged status and facilitate healthy posttraumatic adjustment. Social support was measured using the Family and Friend Support Scales [65] (3-items each, $\alpha = 0.58$ and $\alpha = 0.69$, respectively), with higher scores indicating more social support. The scale has been shown to have moderate-to-good reliability [66].

2.5. Gender and race/ethnicity

Gender was self-reported by the participant and responses were classified as either "male" or "female." In this article, we will use the

Table 2
Odds ratio of lifetime prevalence of PTEs[a] and PTSD[b] for women relative to men within race and ethnicity (age adjusted; *N* = 13,649).

Variables	Full sample	White	Latino	Asian	African-American	Afro-Caribbean
	n (%) endorsed	OR [95%CI]	OR [95%CI]	OR [95%CI]	OR [95%CI]	OR [95%CI]
Any PTE		0.71 [0.55, 0.91]**	1.02 [0.85, 1.22]	0.70 [0.55, 0.90]**	0.77 [0.60, 0.99]*	0.53 [0.32, 0.87]*
Combat	692 (5)	0.01 [0.01, 0.03]***	0.06 [0.03, 0.13]***	0.20 [0.09, 0.44]***	0.05 [0.03, 0.08]***	0.04 [0.01, 0.13]***
Other political violence	1921 (14)	0.36 [0.28, 0.46]***	0.51 [0.37, 0.70]***	0.82 [0.63, 1.06]	0.28 [0.19, 0.40]***	0.34 [0.18, 0.61]***
Victimization[c]	3912 (28)	3.48 [2.81, 4.30]***	2.12 [1.66, 2.73]***	1.84 [1.40, 2.42]***	3.81 [3.10, 4.69]***	2.07 [1.39, 3.10]***
Personal violence[d]	3273 (24)	0.33 [0.26, 0.41]***	0.32 [0.26, 0.41]***	0.33 [0.24, 0.45]***	0.33 [0.27, 0.42]***	0.35 [0.18, 0.69]**
Other personal assault[e]	983 (7)	0.74 [0.59, 0.93]**	0.84 [0.56, 1.23]	0.71 [0.40, 1.30]	0.76 [0.55, 1.04]	0.82 [0.39, 1.74]
Loss	5970 (43)	1.06 [0.91, 1.24]	1.19 [1.01, 1.39]*	1.20 [0.91, 1.58]	1.11 [0.93, 1.33]	0.88 [0.48, 1.61]
Witness violence	5039 (36)	0.42 [0.36, 0.50]***	0.67 [0.55, 0.82]***	0.40 [0.32, 0.50]***	0.50 [0.42, 0.59]***	0.65 [0.49, 0.86]*
Accident	3068 (22)	0.51 [0.43, 0.60]***	0.41 [0.32, 0.54]***	0.60 [0.47, 0.76]***	0.64 [0.53, 0.76]***	0.48 [0.29, 0.79]**
Disaster	3054 (22)	0.66 [0.52, 0.84]***	0.82 [0.66, 1.00]	0.70 [0.56, 0.87]**	0.58 [0.46, 0.74]***	0.64 [0.48, 0.87]**
Illness	2708 (20)	1.05 [0.84, 1.30]	1.37 [1.05, 1.78]*	0.98 [0.69, 1.40]	1.34 [1.10, 1.63]**	0.90 [0.49, 1.67]
Lifetime PTSD diagnosis		2.96 [2.42, 3.63]***	1.67 [1.16, 2.39]**	1.81 [0.95, 3.44]	2.65 [1.95, 3.60]***	1.22 [0.40, 3.75]

Note. CI = confidence interval.
[a] Potentially traumatic events.
[b] Posttraumatic stress disorder.
[c] Victimization = childhood abuse, domestic violence, rape, sexual assault.
[d] Personal violence = physical assault.
[e] Other personal assault = e.g. stalking.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

terms man/men or woman/women to discuss individuals or groups who responded "male" or "female" respectively, as these terms more appropriately refer to gender. Race/ethnicity was self-reported in response to questions based on the U.S. Census [67], and responses to these questions were then used to categorize each participant. Although more than one race or ethnicity could be provided, a hierarchical system was used such that all participants who reported being Asian were coded as Asian regardless of any other response. After Asians, the remaining respondents were coded as Latino if they reported being Latino regardless of any other response. Subsequently, the remaining respondents were coded as Black if they reported being Black regardless of any other response (and further subclassified as either African-American or Afro-Caribbean). The remaining respondents were coded as White only if they exclusively self-identified as White.

2.6. Additional sociodemographic variables

Other demographic variables included participant's self-reported age (18–34, 35–49, 50–65, 65+ years old), birthplace (U.S. Born, Immigrant), marital status (Married, Never Married, Widowed/Divorced/Separated), education (11 years or less, 12 years, 13–15 years, 16 years or more), employment (Employed, Unemployed, Out of the labor force/other), region (Northwest, Midwest, South, West), poverty (above or below poverty level), and urbanicity (non-metro counties, metro counties).

2.7. Data analysis

All analyses were weighted to account for the complex sampling design. We began by comparing sociodemographic, clinical, and contextual characteristics across gender ("male" v. "female") within each race/ethnicity. Significance in differences of proportions within race/ethnicity was tested using Rao-Scott chi-square tests, while significance in mean differences was tested using Wald tests. We then used age-adjusted logistic regression to model the association between gender and the prevalence of (1) any PTE, (2) each of the eleven groups of PTE types, and (3) lifetime PTSD, so 13 models total. To evaluate whether these associations varied by race/ethnicity, interaction terms between gender and race/ethnicity were added to each model and their significance were assessed using Wald chi-square tests. If the interaction

terms were significant, analyses were stratified by race/ethnicity.

To further evaluate the association of gender with lifetime PTSD, we finally estimated multivariable logistic regression models that in addition to age also included nativity, marital status, education, employment, region, poverty, urbanicity, lifetime affective disorder, lifetime substance dependence/use, social support, and exposure to PTEs. Exposure to PTEs was assessed using PTE frequency, i.e., the total number of each PTE experienced by the respondent. Since PTE frequencies were skewed, they were categorized as 0, 1, and > 2 occurrences. In a series of post-hoc analyses, we measured exposure to PTEs using each respondent's "worst" PTE that could lead to a PTSD diagnosis (instead of PTE frequency) and age at exposure to "worst" PTE. Since experiencing a "worst" PTE is conditional on experiencing at least one PTE, these post-hoc analyses were estimated only among respondents with a lifetime PTE. Taylor series linearization was used to estimate standard errors given the complex survey design. Statistical significance was based on two-sided tests at α = 0.05. Analyses were conducted in Stata 14 [68].

3. Results

3.1. Sample characteristics

Descriptive statistics of sociodemographic and main study variables by gender, stratified by race/ethnicity, are presented in Table 1 (*N* = 13,649). In unadjusted models (Table 1), there was an association between gender and lifetime PTSD, except among Asians and Afro-Caribbeans. Lifetime PTSD prevalence was greater for women than men among Whites (9.5% v. 3.6%), Latinos (5.3% v. 3.2%), and African-Americans (12.3% v. 5.1%). Persistent gender differences were found for marital status, lifetime substance use disorders (men > women), and family support (women > men).

3.2. Prevalence of PTE type and PTSD by gender and race/ethnicity: Age-adjusted models

Gender was associated with each group of PTE (except "other") as well as lifetime PTSD across all groups (p < 0.01). Table 2 presents results from stratified analyses. As compared to men, White, Asian, African-American, and Afro-Caribbean women were less likely to

Table 3

Association of gender with lifetime PTSD[a] (worst event) adjusting for demographic variables, clinical variables, and number of PTEs[b] (*N* = 13,649).

	White	Latino	Asian	African-American	Afro-Caribbean
	Lifetime PTSD v. no lifetime PTSD	Lifetime PTSD v. no lifetime PTSD	Lifetime PTSD v. no lifetime PTSD	Lifetime PTSD v. no lifetime PTSD	Lifetime PTSD v. no lifetime PTSD
	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)
Gender					
Men	1	1	1	1	1
Women	2.66 [1.94, 3.64]***	1.31 [0.76, 2.28]	1.37 [0.53, 3.54]	2.54 [1.65, 3.92]***	6.08 [2.76, 13.37]***
Nativity					
U.S.-born	1	1	1	1	1
Immigrant	1.18 [0.64, 2.17]	0.85 [0.39, 1.85]	0.96 [0.33, 2.77]	0.83 [0.31, 2.21]	1.30 [0.67, 2.51]
Age category					
18–34 years	1	1	1	1	1
35–49 years	0.92 [0.59, 1.44]	0.80 [0.34, 1.92]	0.57 [0.27, 1.22]	0.69 [0.44, 1.06]	0.83 [0.37, 1.88]
50–65 years	0.81 [0.56, 1.18]	0.94 [0.42, 2.10]	1.36 [0.31, 6.06]	0.59 [0.31, 1.12]	0.72 [0.22, 2.38]
65+ years	0.20 [0.10, 0.41]***	0.64 [0.12, 3.47]	1.02 [0.30, 3.46]	0.53 [0.22, 1.25]	0.49 [0.05, 5.40]
Marital					
Married	1	1	1	1	1
Never married	0.92 [0.57, 1.48]	1.65 [0.60, 4.52]	0.97 [0.34, 2.77]	0.99 [0.60, 1.65]	1.40 [0.62, 3.17]
Widowed/divorced/separated	1.41 [1.01, 1.98]*	1.70 [0.92, 3.14]	1.46 [0.41, 5.23]	1.19 [0.77, 1.85]	0.73 [0.25, 2.16]
Education					
11 years or less	1	1	1	1	1
12 years	0.63 [0.44, 0.90]*	0.96 [0.50, 1.87]	1.17 [0.24, 5.65]	0.92 [0.63, 1.34]	1.09 [0.47, 2.54]
13–15 years	0.78 [0.56, 1.09]	0.74 [0.37, 1.49]	1.54 [0.57, 4.22]	0.85 [0.55, 1.32]	0.56 [0.17, 1.82]
16 years or more	1.07 [0.73, 1.55]	0.86 [0.32, 2.33]	1.77 [0.76, 4.12]	0.66 [0.36, 1.20]	0.62 [0.20, 1.90]
Employment					
Employed	1	1	1	1	1
Unemployed	0.58 [0.31, 1.11]	0.42 [0.13, 1.41]	1.50 [0.27, 8.39]	1.00 [0.65, 1.54]	0.40 [0.05, 3.41]
Out of labor force/other	1.55 [1.15, 2.11]**	1.35 [0.92, 2.00]	2.05 [0.93, 4.54]	0.98 [0.65, 1.46]	3.30 [1.44, 7.54]**
Region					
Northeast	1	1	1	1	1
Midwest	1.12 [0.68, 1.83]	0.91 [0.43, 1.89]	0.56 [0.05, 5.85]	0.80 [0.43, 1.50]	5.98 [1.28, 27.88]*
South	1.10 [0.82, 1.47]	1.43 [0.72, 2.80]	0.57 [0.06, 5.59]	0.68 [0.44, 1.05]	1.19 [0.64, 2.22]
West	1.04 [0.72, 1.49]	0.79 [0.44, 1.42]	0.57 [0.13, 2.48]	0.52 [0.31, 0.88]*	[#1]
Poverty					
Above poverty level	1	1	1	1	1
Below poverty level	1.08 [0.77, 1.52]	0.67 [0.33, 1.33]	0.59 [0.18, 1.89]	1.12 [0.79, 1.59]	0.78 [0.30, 2.03]
Urbanicity					
Non-metro counties	1	1	1	1	1
Metro counties	0.81 [0.64, 1.01]	2.59 [1.35, 4.95]**	0.87 [0.22, 3.41]	0.82 [0.48, 1.39]	
Lifetime affective disorder					
Negative	1	1	1	1	1
Positive	3.14 [2.09, 4.73]***	3.64 [2.36, 5.60]***	5.47 [1.91, 15.63]**	3.01 [2.14, 4.23]***	8.06 [3.96, 16.41]***
Lifetime substance dependence/use					
Negative	1	1	1	1	1
Positive	1.78 [1.41, 2.25]***	2.39 [0.85, 6.71]	1.16 [0.21, 6.44]	2.16 [1.54, 3.04]***	1.75 [0.77, 3.97]
Family support scale	0.74 [0.47, 1.19]	1.19 [0.45, 3.15]	0.07 [0.01, 0.35]**	0.58 [0.27, 1.23]	0.11 [0.01, 0.97]*
Friend support scale	0.60 [0.39, 0.93]*	0.77 [0.32, 1.83]	1.37 [0.38, 4.94]	1.27 [0.63, 2.55]	5.36 [1.24, 23.21]*

Note. [#1] = Invalid. No Afro-Caribbean respondents residing in the West.

[a] Posttraumatic stress disorder.

[b] Potentially traumatic events.

* *p* < 0.05.

** *p* < 0.01.

*** *p* < 0.001.

experience any PTE. We did not observe gender differences regarding odds of any PTE among Latinos. Women of all ethnicities were less likely to experience combat, personal violence, witnessing violence, and being in an accident than men. Except for Asians, women from all groups were less likely to experience political violence relative to men. Except for Latinas, women from all groups were less likely to experience disasters compared to men. Women of all racial/ethnic groups had higher odds of experiencing victimization than men, ranging from 1.84 times the odds for Asian women to 3.5 and 3.81 times the odds for White and African-American women, respectively. Latina and Afro-Caribbean women had 2.1 times the odds of experiencing victimization compared to men, whereas Latina and African-American women had

1.37 and 1.34 times the odds of reporting illnesses compared to men.

Despite experiencing fewer types of PTE relative to men, White, Latino, and African-American women had higher odds of lifetime PTSD (3.0, 2.65, and 1.67 times the odds, respectively).

3.3. Gender and PTSD by race/ethnicity: Adjusted models using PTE frequency

Table 3 presents regression models examining gender differences stratified by racial/ethnic group. These models have been adjusted for respondent's age, nativity, marital status, education, employment, region, poverty, urbanicity, lifetime affective and substance use disorders,

social support, and number of PTE types. After adjustments, gender differences remained for Whites, African-Americans, and Afro-Caribbeans, but not for Latinos or Asians. Among Latinos, risk for PTSD was associated with urban context and mental health co-morbidity, yet not associated with gender. At no stage of analyses did we find gender differences in PTSD among Asians. Full adjustment models suggested that White women had 2.66 times the odds; African-American women had 2.54 times the odds; and Afro-Caribbean women had 6 times the odds of PTSD compared to men.

Since the number of different PTE types endorsed does not control for the specific event-type, we ran additional post hoc analyses (see Supplemental Materials). In these models, we adjusted for the same covariates as in Table 3, but replaced PTE frequency with the "worst" PTE type and age at "worst" PTE. In many cases, the outcome was predicted perfectly (e.g., women of all racial/ethnic groups whose "worst" PTE was a combat experience had a PTSD diagnosis). Thus, we kept only the PTE types where PTSD was not predicted perfectly for all women of any racial/ethnic group: victimization, loss, witnessing violence, and "other." In these analyses, gender differences were only observed among Whites and African-Americans, with White women having 2.16 times the odds and African-American women having 2.33 times the odds of PTSD compared to men. Compared to the models in Table 3, there were no gender differences in PTSD among Afro-Caribbeans.

4. Discussion

To our knowledge, the present study is the first to estimate gender differences in exposure to PTEs and prevalence of PTSD diagnosis, within ethnic and racial groups. Findings from this large nationally-representative sample suggest that PTE exposure and PTSD differ by both gender and racial/ethnic identity. Specifically, we found that gender differences among most racial/ethnic groups were consistent with previous research suggesting that men are more likely to experience PTEs compared to women [7], except among our Latino sub-group where men and women were equally likely to report exposure to a PTE. We also found that PTE-exposed White (9.5% v. 3.6%), Latina (5.3% v. 3.2%), and African-American (12.3% v. 5.1%) women had higher prevalence of lifetime PTSD compared to PTE-exposed men.

Because our pattern of findings changed after adjusting for covariates, it is likely that the relations between gender and risk for PTSD are quite complex. For example, we found that gender differences were no longer significant for Latinos and became significant for Afro-Caribbean women relative to men when adjusting for number of PTE types. Conditional on experiencing a lifetime PTE, our post-hoc analyses found gender differences only among Whites and African-Americans (women > men) when adjusting for type of "worst" PTE and age at exposure to worst PTE. Together, these findings support the need for further research to understand universal mechanisms of PTSD (e.g., avoidance, cognitive appraisals) and specific risk/resilience and contextual factors associated with PTSD risk [69].

Further, it is possible that appraisals of events as "traumatic" may differ by gender or race/ethnicity. PTSD researchers have long engaged in a debate regarding which types of events may rise to meet Criterion A for PTSD(i.e., events that included life threat, injury, or sexual violence) [2]. Given that research definitions of PTEs have changed over time and may continue to evolve, it is important to determine what other types of events may produce PTSD symptoms. For example, some minority health researchers extend consideration to some types of discrimination experiences as PTEs, using terms such as "racial trauma" [70]. Other studies suggest that exposure to some types of PTEs may be appraised as normative rather than "traumatic" (outside the realm of expectations) by some individuals residing in communities with high rates of community violence [30,71–74]. These articles highlight how even researchers' selection of the types of events that qualify as PTEs may evolve over time. Further, PTE designation is inherently driven by

cultural, historical, and geopolitical contextual factors, and these factors are important to consider in future investigations of PTSD disparities.

There are several possible explanations for why we found that urban context and mental health co-morbidity among Latinos were associated with PTSD. Although no differences were observed by gender, explanatory mechanisms should be explored in future studies. For example, there is evidence of higher incidence of familial and community violence in urban compared to suburban and rural contexts [75,[6]]; thus, those living in urban environments may be more at risk for developing PTSD symptoms [76]. Second, departing from findings across all other groups, Latina women reported equal level of exposure to PTEs relative to men. Equal exposure to PTEs across Latino men and woman may be related to risk factors that are shared equally by men and women, including conditions of poverty, neighborhood factors, and immigration and acculturative stress. Third, it is possible that familial violence is largely under-reported due to fear of involvement with U.S. Immigration and Customs Enforcement or the police [77]. Lack of gender differences among Asians may also reflect under-reporting of interpersonal violence victimization [78]. For example, one study found that South Asian women were less likely to report abuse (and access supports) due to beliefs that being a 'good wife and mother' was contingent upon their ability to sacrifice personal autonomy [79]. Third, marital status and quality may be relevant to understanding risk as well as resilience among Latinos, who are more likely to marry at a younger age [80]. Marital status and quality may be particularly important factors in understanding the nuance of gender and racial/ethnic differences, whereby being married is a protective factor for PTE exposure in men, but a risk factor for women [81,82]. In addition, marital status influences socioeconomic status, which can offer a buffer against *some* stressors [28]. These findings convey the importance of examining how these associations vary across racial/ethnic groups, since gender differences were not observed among Latinos or Asians in main analyses, or Afro-Caribbeans in post-hoc analyses. Our findings stand in contrast to a previous study utilizing the NSAL [83] which found that Afro-Caribbean men are at higher risk of PTSD compared to Afro-Caribbean women. However, their study did not adjust for co-morbid affective and substance use disorders or social support. This is an important distinction, as adjustments for mental health co-morbidity are in line with recommendations from leaders in the field of PTSD research [16].

There are some limitations to the current study that should be noted. First, this study relied on retrospective observational data, which may be subject to recall bias. Second, although we have presented models with covariates that exceed previous reports on this topic, it is possible that additional factors may account for some of our findings. As is problematic in most epidemiological studies, our assessments of race and ethnicity are admittedly crude categorizations that do not capture important nuances of culture and identity—for example we do not measure status *and* process variables associated with identity. Further, our assessment of gender does not allow us to distinguish individuals who may self-identify as transgender or gender nonconforming (where sex assigned at birth differs from current gender identity). Third, we were not able to assess for risk of potential biases among survey non-responders. There are also a few concerns with our assessment of PTEs and PTSD. That is, previous studies suggest that racial/ethnic minorities are more likely to minimize mental health symptoms [84] and the WHO WMH-CIDI may have led to greater false negatives than false positives [51–53]. Because our assessments are based on DSM-IV-TR criteria, and not the current DSM-5, there are some limitations to the generalizability of our findings to more recent literature. Although measures in this study have been validated in large representative samples, the instruments have not been systematically validated across all racial/ethnic groups included in this study. Further research is needed to cross-validate and standardize assessments across racial/ethnic groups and languages.

Further research is needed to understand the complex and dynamic relations between identity (be it, gender, race, or ethnicity) and the risk for PTSD. It is possible that the burden of socially-produced stressors experienced by women and minorities may change (for better or worse) over time, as the political and social landscape of the U.S. changes. Since these data were collected, there have been major changes in immigration to the U.S., including changes in countries of origin, political violence exposure [85], and the potential impact of negative political rhetoric and political actions toward immigrants and refugees (i.e., separation of children from families at the U.S.-Mexico border) [86–89]. Social movements, such as the "Me Too" Movement [90] also reflect changes in the public consciousness about sexual violence and its effects. At the healthcare policy level, Medicaid expansion [91] may have the potential to reduce health disparities. However, recent evidence suggests that mental distress, including suicidality, has only increased among racial/ethnic minorities since these data were collected [92–95].

Given the importance of historical context and current events, researchers may need to assess potential cohort effects. This may involve qualitative research methods to understand the nuance and interplay between various aspects of identity, and how identity is related to exposure to, disclosure of, and recovery from PTEs. Complimentary qualitative research may also inform theory development on how PTSD may manifest differently across groups. Our findings further suggest that mixed-methods and longitudinal data collection are needed to better understand the process of psychological adaptation following PTEs across gender and racial/ethnic groups.

5. Conclusion

Our study is the first to estimate gender differences in exposure to PTEs and prevalence of PTSD, within ethnic and racial groups. Findings from this large, nationally-representative sample suggest that overall exposure to PTEs and risk for PTSD differ by both gender and race/ethnicity. Gender differences in risk for PTSD (women > men) were observed among Whites, African-Americans, and Afro-Caribbeans, but not among Latino and Asian sub-groups. Further research is needed to elucidate the complex relations between gender, race and ethnicity, and risk for PTSD, including the need to identify explanatory risk, resilience, cultural, and contextual factors.

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Declaration of competing interest

The authors have no potential conflicts of interest with respect to the research, authorship, and/or publication of this article to declare.

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