

## Original Article

**Cite this article:** McLaughlin KA *et al* (2019). Racial/ethnic variation in trauma-related psychopathology in the United States: a population-based study. *Psychological Medicine* **49**, 2215–2226. <https://doi.org/10.1017/S0033291718003082>

Received: 22 June 2018

Revised: 14 September 2018

Accepted: 25 September 2018

First published online: 31 October 2018

**Key words:**

Disparities; ethnicity; psychopathology; PTSD; race; trauma

**Author for correspondence:**

Katie A. McLaughlin, E-mail: [mclaughk@uw.edu](mailto:mclaughk@uw.edu)

# Racial/ethnic variation in trauma-related psychopathology in the United States: a population-based study

Katie A. McLaughlin<sup>1</sup>, Kiara Alvarez<sup>2</sup>, Mirko Fillbrunn<sup>2</sup>, Jennifer Greif Green<sup>3</sup>, James S. Jackson<sup>4</sup>, Ronald C. Kessler<sup>5</sup>, Ekaterina Sadikova<sup>5</sup>, Nancy A. Sampson<sup>5</sup>, Corrie L. Vilsaint<sup>6</sup>, David R. Williams<sup>7</sup> and Margarita Alegría<sup>2</sup>

<sup>1</sup>Department of Psychology, Harvard University, Cambridge, MA, USA; <sup>2</sup>Disparities Research Unit, Department of Medicine, Massachusetts General Hospital and Harvard Medical School, Boston, MA, USA; <sup>3</sup>Wheelock College of Education & Human Development, Boston University, Boston, MA, USA; <sup>4</sup>Department of Psychology, University of Michigan, Ann Arbor, MI, USA; <sup>5</sup>Department of Health Care Policy, Harvard Medical School, Boston, MA, USA; <sup>6</sup>Recovery Research Institute, Department of Psychiatry, Massachusetts General Hospital and Harvard Medical School, Boston, MA, USA and <sup>7</sup>Department of Social and Behavioral Sciences, Harvard T.H. Chan School of Public Health, Boston, MA, USA

**Abstract**

**Background.** The prevalence of mental disorders among Black, Latino, and Asian adults is lower than among Whites. Factors that explain these differences are largely unknown. We examined whether racial/ethnic differences in exposure to traumatic events (TEs) or vulnerability to trauma-related psychopathology explained the lower rates of psychopathology among racial/ethnic minorities.

**Methods.** We estimated the prevalence of TE exposure and associations with onset of DSM-IV depression, anxiety and substance disorders and with lifetime post-traumatic stress disorder (PTSD) in the Collaborative Psychiatric Epidemiology Surveys, a national sample ( $N = 13\,775$ ) with substantial proportions of Black (35.9%), Latino (18.9%), and Asian Americans (14.9%).

**Results.** TE exposure varied across racial/ethnic groups. Asians were most likely to experience organized violence – particularly being a refugee – but had the lowest exposure to all other TEs. Blacks had the greatest exposure to participation in organized violence, sexual violence, and other TEs, Latinos had the highest exposure to physical violence, and Whites were most likely to experience accidents/injuries. Racial/ethnic minorities had lower odds ratios of depression, anxiety, and substance disorder onset relative to Whites. Neither variation in TE exposure nor vulnerability to psychopathology following TEs across racial/ethnic groups explained these differences. Vulnerability to PTSD did vary across groups, however, such that Asians were less likely and Blacks more likely to develop PTSD following TEs than Whites.

**Conclusions.** Lower prevalence of mental disorders among racial/ethnic minorities does not appear to reflect reduced vulnerability to TEs, with the exception of PTSD among Asians. This highlights the importance of investigating other potential mechanisms underlying racial/ethnic differences in psychopathology.

The prevalence of mental disorders varies widely as a function of race/ethnicity in the US. Numerous population-based studies have found lower lifetime prevalence of depression, anxiety, and substance disorders among Black, Latino, and Asian people than Whites (Breslau *et al.*, 2005, 2006; Gilman *et al.*, 2008). The factors that explain these racial/ethnic differences are largely unknown.

One possibility is that racial/ethnic minorities are less likely than Whites to develop psychopathology following experiences of adversity, such as traumatic events (TEs). Over two-thirds of US adults have experienced a TE (Kessler *et al.*, 1995; Roberts *et al.*, 2011). TE exposure is strongly associated with virtually all commonly occurring forms of psychopathology (Kessler *et al.*, 1995; Roberts *et al.*, 2011; Walsh *et al.*, 2017). Racial/ethnic differences in trauma-related psychopathology could arise due to variation in either exposure to TEs or vulnerability to developing psychopathology after a TE. With regard to the first possibility, trauma-related psychopathology is more common following certain TE types (e.g. interpersonal violence) than others as well as following exposure to multiple TEs (Kessler *et al.*, 1995; Breslau *et al.*, 1998; Brewin *et al.*, 2000). Differences in the prevalence of exposure to different types of TEs or in cumulative TE exposure could contribute to variation in rates of psychopathology across racial/ethnic groups. Prior studies examining such variability have produced inconsistent findings (Kilpatrick and Acerno, 2003; Hatch and Dohrenwend, 2008). For example, some studies report higher rates of violence exposure among Whites than other groups, whereas others report higher rates of violence exposure and cumulative TE exposure among Blacks as compared with Whites; such discrepancies have been found even in studies conducted in

the same city (Breslau *et al.*, 1991, 1998; Norris, 1992; Turner and Lloyd, 2004). In a national sample, Whites were more likely than racial/ethnic minorities to experience any TE and TEs within their social networks. In contrast, Blacks and Hispanics had higher rates of exposure to violence, particularly child maltreatment and witnessing domestic violence; Blacks, Hispanics, and Asians had higher exposure to war-related TEs than Whites (Roberts *et al.*, 2011). Although existing evidence consistently finds racial/ethnic differences in exposure to specific TE types, the pattern varies considerably across studies and few population-based studies assessing a wide range of TEs have been conducted.

Alternatively, racial/ethnic minorities might exhibit lower disorder prevalence rates because they are less vulnerable to developing psychopathology following TEs than Whites. Resilience to trauma may arise due to greater psychological preparedness to experience TEs among minority groups who routinely encounter discrimination, stigma, and structural oppression in the US. (Kessler *et al.*, 1999; Williams *et al.*, 2003; Hatzenbuehler *et al.*, 2013; Lewis *et al.*, 2015). Greater psychological preparedness has been shown to protect against psychopathology following TE exposure (Basoglu *et al.*, 1997). Reduced vulnerability to TEs might explain the lower rates of psychopathology among Black and Latino adults, despite greater exposure to TEs most strongly associated with mental disorders (i.e. interpersonal violence) (Roberts *et al.*, 2011) and higher levels of cumulative TE exposure (Turner and Lloyd, 2004). Racial/ethnic differences in psychopathology following TEs have been studied primarily with regard to post-traumatic stress disorder (PTSD) and findings are mixed. Some studies report no racial/ethnic differences in conditional risk of PTSD (i.e. risk of developing PTSD following exposure to a TE) among Blacks and Whites (Breslau *et al.*, 1991; Norris, 1992), and others observe higher conditional risk of PTSD among Blacks relative to Whites (Breslau *et al.*, 1998; Roberts *et al.*, 2011; Alegría *et al.*, 2013). Multiple studies document lower conditional risk of PTSD among Asians than Whites after accounting for variability in exposure to different types of TEs across groups (Roberts *et al.*, 2011; Alegría *et al.*, 2013). Few studies have examined racial/ethnic differences in trauma-related psychopathology other than PTSD.

Here, we examine racial/ethnic differences in exposure to a wide range of TEs, associations of TEs with the subsequent onset of depression, anxiety, and substance disorders, and conditional risk of PTSD following TE exposure. We expected that Black and Latino respondents would experience the highest exposure to TEs involving interpersonal violence, and that Asians would have the lowest overall levels of TE exposure. We hypothesized that lower TE exposure among Asians and lower vulnerability to TEs among Blacks and Latinos would explain, in part, their lower odds of psychopathology relative to Whites. We examine these associations using pooled data from three nationally representative samples of psychiatric disorders in the US that include substantial proportions of Black, Latino, and Asian Americans. We predicted that Black, Latino, and Asians would be less likely than Whites to develop mental disorders, including PTSD, following exposure to TEs.

## Methods

### Sample

Participants were drawn from the Collaborative Psychiatric Epidemiology Studies (CPES) Dataset ( $N = 13\,775$ ) (Heeringa

*et al.*, 2004). The CPES includes pooled data from three population-based surveys of mental disorders among US-household residents ages 18 and older: the National Comorbidity Survey-Replication (NCS-R) (Kessler and Merikangas, 2004), the National Latino and Asian American Study (NLAAS) (Alegría *et al.*, 2004), and the National Survey of American Life (NSAL) (Jackson *et al.*, 2004). We used a pooled CPES dataset that has been used in prior research (Molina *et al.*, 2012).

The NCS-R, NLAAS, and NSAL surveys were conducted in coordination between 2001 and 2003 to assess mental health among US-household residents from varying racial/ethnic groups. The NCS-R was based on a probability sample of English-speaking household residents without regard to race/ethnicity, and the NSAAL and NSAL were based on probability samples of households that over-sampled areas known to have high concentrations of African Americans, Caribbean Blacks, Asian Americans, and Latinos. All surveys were based on multi-stage clustered area probability household samples that represent the household population of the contiguous US. These samples were merged to create a single, nationally representative study using design-based analysis weights. The final merged sample was further adjusted for the residual differences between the sample and the US-household population on a range of socio-demographic and geographic characteristics. Details about the design of each survey and procedures for merging the samples can be found in the online Supplementary Materials and has been published elsewhere (Alegría *et al.*, 2004; Heeringa *et al.*, 2004; Jackson *et al.*, 2004; Kessler and Merikangas, 2004; Pennell *et al.*, 2004).

This final sample included 13 775 respondents, consistent with prior work that pooled these three surveys (Molina *et al.*, 2012). Recruitment, consent and field procedures were approved by the Human Subjects Committees of the University of Michigan, Harvard Medical School, Cambridge Health Alliance, and the University of Washington. Informed consent was obtained before conducting surveys for all participants.

### Race/ethnicity

Race/ethnicity was coded as Asian, Latino, Black, and White using a hierarchical system (see online Supplementary Materials for details). Respondents who reported being Asian were coded Asian regardless of any additional response provided. The same approach was used for remaining respondents who reported being Latino, then those who reported being Black. Remaining respondents were coded as White if they reported no other race or ethnicity.

### Exposure to traumatic experiences

Respondents were asked about lifetime exposure to 27 different types of TEs and two open-ended questions about exposure to 'any other' TE and to any 'private' TE the respondent did not want to discuss. Positive responses were followed by probes to assess number of lifetime exposures and age at first exposure to each TE type. Exploratory factor analysis of these TEs in a large, cross-national sample (Liu *et al.*, 2017) found six TE groups: five reflecting exposure to organized violence (e.g. civilian in a war zone, relief worker in a war zone, refugee); five related to participation in organized violence (e.g. combat experience, witnessed atrocities); three reflecting physical violence victimization (witnessed violence at home as a child; beaten by a caregiver as

a child; victim of assault); seven related to sexual violence (e.g. raped, sexually assaulted, beaten by a romantic partner); six involving accidents/injuries (e.g. natural disaster, toxic chemical exposure, motor vehicle accident); and three that were not strongly correlated with any other TEs (mugged or threatened with a weapon, manmade disaster other than chemical exposure, unexpected death of a loved one). TEs were classified into these six groups for all analyses. To examine cumulative TE exposure, we created a count variable reflecting the total number of TEs experienced by each respondent.

### Diagnostic assessment

Diagnostic and Statistical Manual of Mental Disorders-IV mental disorders were assessed with the Composite International Diagnostic Interview (CIDI) (Kessler and Üstun, 2004), a fully structured interview administered by trained lay interviewers. We focus on disorders assessed in all CPES samples, including major depression, generalized anxiety disorder (GAD), social phobia, agoraphobia with or without panic disorder (hereafter referred to as agoraphobia), PTSD, and both alcohol and substance abuse with/without dependence. PTSD was assessed in relation to the lifetime TE the respondent identified as 'worst' (i.e. as causing the most severe and persistent PTSD symptoms). As described elsewhere (Kessler *et al.*, 2005), generally good concordance was found between diagnoses based on the CIDI and those based on blinded clinical reappraisal interviews with the Structured Clinical Interview for DSM-IV (SCID) (First *et al.*, 2002).

### Analysis methods

We first examined racial/ethnic differences in TE exposure using cross-tabulations. Second, we evaluated whether racial/ethnic differences in disorder onset were explained by differences in TE exposure or variation in TE associations with disorder onset. Associations of race/ethnicity and TEs with disorder onset were estimated using discrete-time survival analysis with person-year as the unit of analysis (Singer and Willett, 1993) for all outcomes except PTSD. Data were censored at the year of first onset of the disorder or age-of-interview for those with no history of the focal disorder. TEs were examined as time-varying predictors (using the six TE categories described above) coded 0 until the age of first exposure to a TE within the category and 1 for each year after that exposure. We estimated five survival models for each disorder. The first model estimated associations of race/ethnicity with disorder onset controlling for age, sex, and person-year to examine racial/ethnic differences in disorder onset before considering the role of TEs. Model 2 added controls for TE types associated with the focal disorder to determine whether racial/ethnic variation in disorder onset was the result of differences in TE exposure. To select TE covariates, we examined associations of the six TE categories with each disorder. TE categories unrelated to that disorder were not included in the final models. For TE categories associated with a particular disorder, we examined whether the associations varied across TE types in that category. If the association with disorder onset varied across TE types, only those TEs associated with the focal disorder were retained to avoid overfitting the model. If all TEs in a category were associated with the disorder homogeneously, a count of TEs in that category was used (see online Supplementary Table S1 for details on TE covariates for each disorder). We estimated interactions between

race/ethnicity and TE variables that were retained in the model. If these interactions were significant as a set, we identified the specific interaction terms that were significant and ran stratified analyses examining TE-disorder onset associations separately within each racial/ethnic group. To determine whether cumulative exposure to TEs contributed to racial/ethnic differences in disorder onset, we added an additional covariate to model 3 denoting the total number of TEs a respondent experienced prior to onset of the focal disorder. To adjust for differences in prior psychopathology, model 4 additionally controlled for mental disorders that began prior to onset of the focal disorder. Finally, model 5 examined model 1 in the subset of respondents with no exposure to the TEs included in model 2, with the assumption that racial/ethnic differences would be reduced among those with no TE exposure if lower vulnerability to trauma-related psychopathology occurred among racial/ethnic minorities relative to Whites.

Because PTSD was assessed only in relation to the worst TE for the NSAL, associations of TEs with PTSD were examined using logistic regression rather than survival analysis. Model 1 examined race/ethnicity as a predictor adjusting for age and sex. Model 2 was estimated in the subset of participants who experienced a TE and controlled for age at first TE exposure. Model 3 additionally controlled for cumulative exposure to TEs prior to the respondent's worst TE. Model 4 included an additional covariate for mental disorders occurring prior to onset of the worst TE. Model 5 additionally controlled for each respondent's worst TE and examined racial/ethnic differences in the association of each TE type with PTSD.

Regression coefficients and standard errors were exponentiated and reported as ORs with 95% confidence intervals (CIs). Statistical significance was evaluated using 0.05-level two-sided tests based on the design-based Taylor series method (Wolter, 1985) implemented in the SAS software system (SAS Institute Inc., 2008) to adjust for the weighting and clustering of observations.

## Results

### Lifetime disorder prevalence by race/ethnicity

Lifetime prevalence of all DSM-IV/CIDI disorders varied significantly as a function of race/ethnicity (Table 1). Lifetime prevalence was lowest among Asian respondents and highest among Whites for all disorders except PTSD, where prevalence was highest among Black respondents. As compared with Whites, Asian respondents had lower odds of all lifetime disorders (ORs = 0.3–0.6), Latino respondents had lower ORs of depression, GAD, social phobia, drug abuse/dependence, and PTSD (ORs = 0.6–0.7), and Black respondents had lower ORs of all disorders except PTSD (ORs = 0.4–0.7).

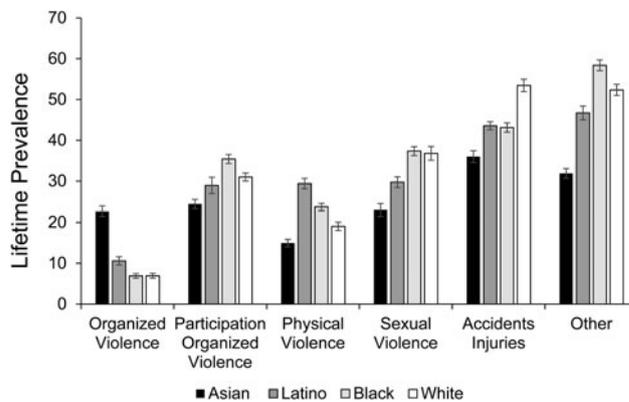
### Racial/ethnic differences in exposure to traumatic experiences

Lifetime prevalence of TE exposure varied by race/ethnicity for all six TE categories, although specific patterns varied across category (Fig. 1, Table 2). Asian respondents had the lowest rate of TE exposure for all categories except for exposure to organized violence where they had the highest lifetime prevalence (22.7%), followed by Latino (10.6%), White (7.0%), and Black (6.9%) respondents. Racial/ethnic variation in exposure to organized violence was driven largely by differences in the odds of being a refugee, which were higher for Asian, Latino, and Black respondents

**Table 1.** Lifetime prevalence of DSM-IV/CIDI disorders by race/ethnicity (*n* = 13 775)

Diagnosis	Asian <sup>a</sup> <i>n</i> = 2046 % (s.e.)	Latino <sup>a</sup> <i>n</i> = 2602 % (s.e.)	Black <sup>a</sup> <i>n</i> = 4943 % (s.e.)	White <sup>a</sup> <i>n</i> = 4184 % (s.e.)	Asian v. White <sup>b</sup> OR (95% CI)	Latino v. White <sup>b</sup> OR (95% CI)	Black v. White <sup>b</sup> OR (95% CI)	<i>F</i> , <i>p</i> value
Major depressive episode	8.98 (0.82)	15.20 (0.74)	10.15 (0.48)	20.73 (0.83)	0.45* (0.34–0.60)	0.73* (0.64–0.83)	0.43* (0.38–0.49)	58.16, <i>p</i> < 0.001
GAD	2.63 (0.32)	4.62 (0.50)	4.21 (0.42)	8.69 (0.52)	0.34* (0.24–0.47)	0.60* (0.44–0.80)	0.47* (0.36–0.60)	20.49, <i>p</i> < 0.001
Social phobia	5.18 (0.57)	7.58 (0.71)	7.29 (0.48)	12.68 (0.49)	0.57* (0.37–0.86)	0.67* (0.54–0.83)	0.53* (0.43–0.64)	15.87, <i>p</i> < 0.001
Agoraphobia with/without panic	2.44 (0.46)	5.53 (0.68)	4.89 (0.42)	6.21 (0.33)	0.43* (0.27–0.70)	0.79 (0.59–1.04)	0.74* (0.59–0.93)	5.64, <i>p</i> = 0.007
Alcohol abuse/dependence	3.60 (0.65)	10.80 (1.09)	9.29 (0.64)	13.38 (0.68)	0.33* (0.21–0.51)	0.82 (0.64–1.06)	0.66* (0.54–0.80)	12.33, <i>p</i> < 0.001
Drug abuse/dependence	2.21 (0.48)	6.07 (0.67)	6.04 (0.50)	7.94 (0.41)	0.39* (0.24–0.62)	0.72* (0.54–0.97)	0.68* (0.54–0.86)	7.56, <i>p</i> < 0.001
PTSD based on worst event <sup>c</sup>	1.64 (0.44)	3.77 (0.51)	6.73 (0.40)	5.59 (0.53)	0.26* (0.14–0.46)	0.63* (0.45–0.88)	1.12 (0.90–1.39)	11.23, <i>p</i> < 0.001

<sup>a</sup>Prevalence estimates are reported at the person-level.  
<sup>b</sup>Models were estimated using discrete-time survival analysis (other than for PTSD) and controlled for person-year, age, and sex.  
<sup>c</sup>The PTSD model was estimated using logistic regression and controlled for age and sex.  
 \**p* ≤ 0.05.



**Fig. 1.** Lifetime prevalence of traumatic experiences in the United States as a function of race/ethnicity (*N* = 13 775).

compared with Whites (ORs = 2.9–75.0). Black respondents had the highest exposure to participation in organized violence (35.4% relative to 24.4–31.0% for other groups), sexual violence (37.4% relative to 23.0–36.8% for other groups), and the other TE category (58.4% relative to 31.9–52.4% for other groups). Higher odds of exposure to four of 10 TE types involving organized violence (ORs = 1.2–2.9), three of seven TEs involving sexual violence (ORs = 1.2–1.4), and one of three other TEs were observed among Black relative to White respondents. In contrast, Latino respondents had the highest rates of physical violence victimization (29.4% relative to 15.0–23.7% for other groups), with higher exposure to all three physical violence TE types relative to Whites (ORs = 1.3–1.8). Whites were more likely to report accidents and injuries (53.4%) than other racial/ethnic groups (36.0–43.6%; ORs = 1.12–1.38).

Racial/ethnic differences in cumulative TE exposure were also observed. Asians were most likely to have an absence of any TE (29.9%; OR = 2.2 as compared with Whites) and least likely to have experienced three or more TEs (31.6%; OR = 0.57 as compared with Whites). In contrast, Blacks (47.3%), Whites (44.8%), and Latinos (41.6%), all had similar levels of exposure to three or more TEs.

**Racial/ethnic differences in disorder onset**

Lifetime disorder onset varied as a function of race/ethnicity for all disorders in models that did not adjust for TE exposure (Table 3). Asian and Black respondents had significantly lower odds of lifetime disorder onset as compared with Whites for all disorders examined (ORs = 0.33–0.57 for Asians relative to Whites; ORs = 0.43–0.74 for Blacks relative to Whites). Latino respondents had reduced odds of depression, GAD, and social phobia onset relative to Whites (ORs = 0.60–0.73). These patterns were largely unchanged in model 2, which included controls for exposure to TEs associated with onset of the focal disorder (see online Supplementary Table S1 for details on TE variables for each disorder). With the addition of TE exposure to the model, both Asian (ORs = 0.35–0.59) and Black (ORs = 0.42–0.75) respondents continued to have reduced odds of onset for every disorder as compared with Whites, and Latinos had reduced odds of onset of all disorders other than agoraphobia (ORs = 0.58–0.71). This pattern was unchanged after controlling for cumulative TE exposure in model 3. However, when controls for prior mental disorders were added in model 4, racial/ethnic

**Table 2.** Lifetime prevalence of traumatic experiences (TEs) by race/ethnicity ( $n = 13\,775$ )

Traumatic experience types	Asian <sup>a</sup> $n = 2046$ % (s.e.)	Latino <sup>a</sup> $n = 2602$ % (s.e.)	Black <sup>a</sup> $n = 4943$ % (s.e.)	White <sup>a</sup> $n = 4184$ % (s.e.)	Asian v. White <sup>b</sup> OR (95% CI)	Latino v. White <sup>b</sup> OR (95% CI)	Black v. White <sup>b</sup> OR (95% CI)	$F, p$ value
<b>Exposure to organized violence</b>								
Relief worker in war zone	1.39 (0.20)	1.10 (0.27)	1.89 (0.23)	1.45 (0.28)	1.37 (0.46–4.04)	0.92 (0.39–2.14)	1.48 (0.86–2.54)	0.94, $p = 0.42$
Civilian in war zone	9.35 (0.88)	3.85 (0.46)	1.71 (0.25)	2.17 (0.33)	1.93 (1.00–3.71)	0.98 (0.56–1.70)	0.67 (0.40–1.13)	2.38, $p = 0.067$
Civilian in region of terror	8.02 (0.68)	5.12 (0.65)	3.11 (0.38)	2.63 (0.38)	0.96 (0.44–2.10)	1.22 (0.71–2.10)	0.98 (0.66–1.45)	0.21, $p = 0.89$
Refugee	12.37 (1.15)	3.84 (0.48)	0.93 (0.26)	0.53 (0.15)	74.95* (34.74–161.71)	32.1* (15.02–68.63)	2.89* (1.11–7.56)	49.96, $p < 0.001$
Kidnapped	2.38 (0.46)	1.36 (0.24)	1.51 (0.23)	1.41 (0.21)	0.78 (0.38–1.61)	0.89 (0.50–1.56)	1.01 (0.66–1.54)	0.20, $p = 0.90$
Any	22.71 (1.25)	10.60 (1.00)	6.91 (0.56)	6.95 (0.61)	2.59* (1.91–3.52)	1.58* (1.21–2.08)	1.07 (0.86–1.33)	13.74, $p < 0.001$
<b>Participation in organized violence</b>								
Witnessed death/serious injury	21.93 (1.12)	27.14 (1.86)	32.21 (1.14)	27.75 (0.96)	0.59* (0.47–0.74)	1.06 (0.89–1.26)	1.24* (1.08–1.42)	13.89, $p < 0.001$
Accidentally caused injury/death	0.48 (0.16)	2.32 (0.37)	1.69 (0.27)	1.26 (0.15)	0.38 (0.12–1.24)	2.33* (1.37–3.95)	1.40 (0.87–2.24)	5.04, $p = 0.002$
Combat experience	3.55 (0.42)	2.84 (0.52)	6.25 (0.42)	5.11 (0.56)	0.83 (0.44–1.54)	0.92 (0.53–1.60)	1.62* (1.11–2.36)	3.33, $p = 0.019$
Purposely injured/tortured/killed	0.91 (0.25)	2.04 (0.32)	3.63 (0.41)	1.70 (0.22)	1.02 (0.47–2.20)	1.42 (0.87–2.33)	2.24* (1.47–3.42)	4.95, $p = 0.002$
Witnessing atrocities	3.78 (0.42)	2.86 (0.58)	5.27 (0.52)	6.10 (0.60)	0.52* (0.27–1.00)	0.60 (0.35–1.02)	0.96 (0.67–1.38)	2.38, $p = 0.068$
Any	24.42 (1.11)	28.95 (2.00)	35.41 (1.11)	30.98 (0.96)	0.60* (0.50–0.71)	1.04 (0.89–1.20)	1.27* (1.15–1.41)	26.20, $p < 0.001$
<b>Physical violence victimization</b>								
Beaten up by someone else	4.94 (0.52)	8.84 (0.89)	5.80 (0.57)	6.82 (0.52)	0.70 (0.48–1.03)	1.45* (1.06–1.97)	0.83 (0.62–1.11)	5.80, $p < 0.001$
Witnessed physical fight at home	8.01 (0.76)	18.66 (0.98)	17.69 (0.85)	12.32 (0.83)	0.99 (0.7–1.41)	1.81* (1.46–2.25)	1.42* (1.19–1.69)	11.47, $p < 0.001$
Beaten up by caregiver	5.72 (0.60)	11.28 (0.64)	5.19 (0.51)	6.02 (0.29)	0.85 (0.56–1.27)	1.34* (1.01–1.78)	0.74* (0.57–0.95)	4.44, $p = 0.004$
Any	14.96 (0.93)	29.39 (1.27)	23.71 (0.86)	19.05 (1.02)	0.90 (0.75–1.09)	1.58* (1.34–1.87)	1.15 (0.99–1.33)	17.84, $p < 0.001$
<b>Sexual violence victimization</b>								
Raped	2.96 (0.39)	6.68 (0.54)	10.06 (0.62)	8.38 (0.70)	0.41* (0.28–0.59)	0.92 (0.71–1.20)	1.05 (0.83–1.34)	10.22, $p < 0.001$
Sexually assaulted	7.98 (0.67)	8.85 (0.73)	12.63 (0.72)	12.36 (0.59)	0.73* (0.56–0.97)	0.96 (0.77–1.20)	0.93 (0.79–1.09)	1.70, $p = 0.17$
Stalked	5.37 (0.55)	7.82 (0.74)	12.75 (0.77)	9.49 (0.64)	0.53* (0.39–0.73)	0.70* (0.54–0.92)	1.24* (1.03–1.51)	12.94, $p < 0.001$
Beaten up by romantic partner	2.57 (0.52)	6.72 (0.72)	9.84 (0.63)	6.87 (0.82)	0.49* (0.29–0.84)	1.17 (0.82–1.66)	1.39* (1.06–1.82)	7.17, $p < 0.001$
TE to loved one	3.93 (0.64)	7.73 (0.54)	9.62 (0.60)	9.57 (0.73)	0.47* (0.31–0.71)	0.74* (0.58–0.95)	0.91 (0.73–1.14)	5.07, $p = 0.002$
Some other event	3.57 (0.60)	3.83 (0.41)	4.02 (0.32)	7.92 (0.54)	0.47* (0.26–0.85)	0.52 (0.25–1.09)	0.51* (0.32–0.81)	4.02, $p = 0.009$
Private event	6.43 (0.85)	7.71 (0.83)	8.15 (0.44)	6.49 (0.42)	1.48* (1.06–2.07)	1.34* (1.01–1.79)	1.26* (1.06–1.49)	3.40, $p = 0.017$
Any	22.97 (1.54)	29.74 (1.33)	37.36 (1.09)	36.79 (1.70)	0.56* (0.47–0.68)	0.86 (0.74–1.01)	1.09 (0.95–1.24)	19.35, $p < 0.001$
<b>Accidents/injuries</b>								
Natural disaster	18.33 (1.15)	18.70 (1.10)	14.22 (1.08)	18.22 (1.05)	1.26 (0.98–1.62)	0.96 (0.76–1.22)	0.76* (0.61–0.95)	4.67, $p = 0.003$

(Continued)

Table 2. (Continued.)

Traumatic experience types	Asian <sup>a</sup> <i>n</i> = 2046 % (s.e.)	Latino <sup>a</sup> <i>n</i> = 2602 % (s.e.)	Black <sup>a</sup> <i>n</i> = 4943 % (s.e.)	White <sup>a</sup> <i>n</i> = 4184 % (s.e.)	Asian v. White <sup>b</sup> OR (95% CI)	Latino v. White <sup>b</sup> OR (95% CI)	Black v. White <sup>b</sup> OR (95% CI)	<i>F</i> , <i>p</i> value
Toxic chemical exposure	1.79 (0.38)	4.53 (0.46)	5.89 (0.48)	7.79 (0.50)	0.29* (0.16–0.51)	0.64* (0.47–0.88)	0.83 (0.65–1.06)	6.55, <i>p</i> < 0.001
Automobile accident	12.90 (0.73)	18.69 (0.76)	17.79 (0.50)	19.76 (1.11)	0.79* (0.62–1.00)	1.08 (0.92–1.26)	0.90 (0.78–1.03)	4.21, <i>p</i> = 0.006
Life-threatening illness	7.97 (0.68)	8.94 (0.72)	12.07 (0.54)	17.75 (0.76)	0.61* (0.47–0.79)	0.68* (0.55–0.84)	0.77* (0.67–0.87)	8.91, <i>p</i> < 0.001
Child with serious illness	4.09 (0.44)	7.17 (0.63)	9.92 (0.49)	12.33 (0.89)	0.40* (0.30–0.54)	0.80 (0.60–1.05)	0.91 (0.75–1.10)	13.15, <i>p</i> < 0.001
Other life threatening accident	4.20 (0.41)	7.13 (0.83)	6.23 (0.50)	10.27 (0.59)	0.48* (0.35–0.66)	0.77 (0.56–1.06)	0.62* (0.50–0.78)	9.81, <i>p</i> < 0.001
Any	36.01 (1.44)	43.57 (0.98)	43.12 (1.13)	53.44 (1.51)	0.72* (0.65–0.80)	0.88* (0.80–0.97)	0.83* (0.75–0.91)	15.29, <i>p</i> < 0.001
Other								
Mugged/threatened with a weapon	9.98 (0.80)	22.25 (1.38)	24.73 (1.19)	16.82 (0.61)	0.68* (0.54–0.86)	1.39* (1.17–1.65)	1.55* (1.33–1.80)	20.94, <i>p</i> < 0.001
Man-made disaster	3.86 (0.51)	3.92 (0.57)	6.40 (0.44)	6.59 (0.59)	0.57 (0.30–1.07)	0.72 (0.48–1.08)	1.05 (0.83–1.32)	2.38, <i>p</i> = 0.068
Unexpected death of loved one	23.61 (1.12)	34.41 (1.24)	47.45 (1.36)	43.32 (1.42)	0.54* (0.45–0.64)	0.82* (0.71–0.95)	1.10 (0.97–1.24)	23.71, <i>p</i> < 0.001
Any	31.89 (1.20)	46.71 (1.67)	58.38 (1.31)	52.36 (1.37)	0.64* (0.55–0.73)	0.99 (0.90–1.10)	1.19* (1.09–1.30)	26.03, <i>p</i> < 0.001
Cumulative trauma count								
0	29.91 (1.22)	24.31 (1.33)	19.52 (1.25)	15.78 (0.96)	2.20* (1.82–2.65)	1.60* (1.31–1.96)	1.24 (0.99–1.55)	25.15, <i>p</i> < 0.001
1	22.65 (0.88)	18.32 (1.15)	17.74 (0.79)	21.31 (1.16)	1.11 (0.92–1.33)	0.85 (0.69–1.05)	0.80* (0.67–0.97)	6.05, <i>p</i> < 0.001
2	15.81 (0.88)	16.06 (0.99)	15.41 (0.80)	18.14 (0.79)	0.85 (0.71–1.01)	0.86 (0.72–1.04)	0.82* (0.71–0.95)	2.63, <i>p</i> = 0.053
3+	31.63 (1.19)	41.61 (1.93)	47.34 (1.23)	44.78 (1.63)	0.57* (0.48–0.68)	0.89 (0.73–1.08)	1.14 (0.96–1.34)	27.15, <i>p</i> < 0.001

<sup>a</sup>Prevalence estimates are reported at the person-level.

<sup>b</sup>Models were estimated using discrete-time survival analysis predicting first onset of each TE type as a function of race/ethnicity and controlled for person-year, age, and sex.

\**p* ≤ 0.05.

**Table 3.** Racial/ethnic differences (ORs) in disorder onset and lifetime PTSD ( $n = 13\,775$ )<sup>a</sup>

	Model 1 <sup>b</sup> OR (95% CI) <sup>g</sup>	Model 2 <sup>c</sup> OR (95% CI) <sup>g</sup>	Model 3 <sup>d</sup> OR (95% CI) <sup>g</sup>	Model 4 <sup>e</sup> OR (95% CI) <sup>g</sup>	Model 5 <sup>f</sup> OR (95% CI) <sup>g</sup>
<b>Major depressive episode</b>					
Asian	0.45* (0.34–0.60)	0.54* (0.41–0.70)	0.54* (0.41–0.71)	0.58* (0.44–0.76)	0.34* (0.20–0.59)
Latino	0.73* (0.64–0.83)	0.71* (0.62–0.82)	0.72* (0.62–0.82)	0.77* (0.67–0.89)	0.65* (0.48–0.89)
Black	0.43* (0.38–0.49)	0.42* (0.36–0.47)	0.42* (0.37–0.47)	0.44* (0.39–0.50)	0.32* (0.25–0.42)
<i>F</i> , <i>p</i> value	58.16, $p < 0.001$	59.55, $p < 0.001$	59.42, $p < 0.001$	53.59, $p < 0.001$	27.05, $p < 0.001$
<b>GAD</b>					
Asian	0.34* (0.24–0.47)	0.42* (0.30–0.58)	0.42* (0.30–0.59)	0.48* (0.34–0.67)	0.20* (0.09–0.43)
Latino	0.60* (0.44–0.80)	0.58* (0.43–0.79)	0.58* (0.43–0.79)	0.63* (0.47–0.86)	0.69 (0.43–1.11)
Black	0.47* (0.36–0.60)	0.46* (0.35–0.59)	0.46* (0.35–0.59)	0.53* (0.41–0.68)	0.36* (0.21–0.61)
<i>F</i> , <i>p</i> value	20.49, $p < 0.001$	17.54, $p < 0.001$	17.54, $p < 0.001$	11.64, $p < 0.001$	9.33, $p < 0.001$
<b>Social phobia</b>					
Asian	0.57* (0.37–0.86)	0.59* (0.39–0.90)	0.59* (0.39–0.90)	0.58* (0.38–0.89)	0.53* (0.32–0.86)
Latino	0.67* (0.54–0.83)	0.61* (0.49–0.77)	0.61* (0.49–0.76)	0.61* (0.49–0.77)	0.64* (0.48–0.84)
Black	0.53* (0.43–0.64)	0.51* (0.42–0.63)	0.51* (0.42–0.62)	0.52* (0.43–0.63)	0.55* (0.44–0.68)
<i>F</i> , <i>p</i> value	15.87, $p < 0.001$	16.61, $p < 0.001$	17.02, $p < 0.001$	16.80, $p < 0.001$	11.15, $p < 0.001$
<b>Agoraphobia with/without panic</b>					
Asian	0.43* (0.27–0.70)	0.50* (0.31–0.80)	0.49* (0.31–0.79)	0.53* (0.33–0.86)	0.47 (0.22–1.00)
Latino	0.79 (0.59–1.04)	0.76 (0.57–1.02)	0.77 (0.57–1.02)	0.83 (0.62–1.11)	0.78 (0.51–1.19)
Black	0.74* (0.59–0.93)	0.75* (0.60–0.95)	0.76* (0.60–0.95)	0.85 (0.68–1.06)	0.68* (0.51–0.92)
<i>F</i> , <i>p</i> value	5.64, $p < 0.001$	4.56, $p = 0.003$	4.54, $p = 0.003$	2.74, $p = 0.042$	3.03, $p = 0.028$
<b>Alcohol abuse/dependence</b>					
Asian	0.33* (0.21–0.51)	0.35* (0.22–0.55)	0.35* (0.22–0.55)	0.41* (0.26–0.64)	0.27* (0.15–0.48)
Latino	0.82 (0.64–1.06)	0.71* (0.54–0.93)	0.71* (0.54–0.93)	0.81 (0.62–1.07)	0.78 (0.55–1.11)
Black	0.66* (0.54–0.80)	0.63* (0.52–0.77)	0.63* (0.52–0.77)	0.69* (0.53–0.89)	0.66* (0.52–0.84)
<i>F</i> , <i>p</i> value	12.33, $p < 0.001$	12.04, $p < 0.001$	12.22, $p < 0.001$	6.61, $p < 0.001$	8.57, $p < 0.001$

(Continued)

**Table 3.** (Continued.)

	Model 1 <sup>b</sup> OR (95% CI) <sup>g</sup>	Model 2 <sup>c</sup> OR (95% CI) <sup>g</sup>	Model 3 <sup>d</sup> OR (95% CI) <sup>g</sup>	Model 4 <sup>e</sup> OR (95% CI) <sup>g</sup>	Model 5 <sup>f</sup> OR (95% CI) <sup>g</sup>
Drug abuse/dependence					
Asian	0.39* (0.24–0.62)	0.43* (0.25–0.72)	0.43* (0.25–0.72)	0.54* (0.31–0.95)	0.36* (0.18–0.71)
Latino	0.72* (0.54–0.97)	0.61* (0.43–0.87)	0.62* (0.43–0.87)	0.78 (0.54–1.14)	0.54* (0.29–0.98)
Black	0.68* (0.54–0.86)	0.60* (0.46–0.79)	0.61* (0.46–0.79)	0.74* (0.55–0.99)	0.58* (0.37–0.90)
<i>F</i> , <i>p</i> value	7.56, <i>p</i> < 0.001	7.82, <i>p</i> < 0.001	7.85, <i>p</i> < 0.001	2.72, <i>p</i> = 0.043	4.68, <i>p</i> = 0.003
PTSD based on worst event <sup>h</sup>					
Asian	0.26* (0.14–0.46)	0.31* (0.17–0.56)	0.35* (0.20–0.63)	0.42* (0.23–0.77)	0.40* (0.22–0.74)
Latino	0.63* (0.45–0.88)	0.69* (0.49–0.97)	0.66* (0.46–0.96)	0.75 (0.53–1.07)	0.75 (0.53–1.07)
Black	1.12 (0.90–1.39)	1.16 (0.95–1.43)	1.09 (0.89–1.34)	1.25* (1.01–1.55)	1.04 (0.84–1.30)
<i>F</i> , <i>p</i> value	11.23, <i>p</i> < 0.001	9.15, <i>p</i> < 0.001	6.03, <i>p</i> < 0.001	6.78, <i>p</i> < 0.001	3.70, <i>p</i> = 0.013

<sup>a</sup>Models for all disorders except PTSD were estimated in a discrete-time survival framework. Models for PTSD were estimated using logistic regression.

<sup>b</sup>Model 1 adjusted for person-year, age, and sex for all disorders except PTSD (see footnote h for details on PTSD model).

<sup>c</sup>Model 2 adjusted for person-year, age, sex, and TE variables that were significantly associated with the focal disorder (see Supplemental Table S1 for details on TE variables included for each disorder) for all disorders other than PTSD (see footnote h for details on PTSD model).

<sup>d</sup>Model 3 adjusted for person-year, age, sex, TE variables that were significantly associated with the focal disorder, and a count of the number of cumulative TEs experienced prior to first onset of the focal disorder for all disorders other than PTSD (see footnote h for details on PTSD model).

<sup>e</sup>Model 4 adjusted for person-year, age, sex, TE variables that were significantly associated with the focal disorder, a count of the number of cumulative TEs experienced prior to first onset of the focal disorder, and onset of other mental disorders prior to onset of the focal disorder for all disorders other than PTSD (see footnote h for details on PTSD model).

<sup>f</sup>Model 5 was estimated in the subset of respondents who did not experience the TE variables associated with the focal disorder, and adjusted for person-year, age, sex for all disorders other than PTSD (see footnote h for details on PTSD model).

<sup>g</sup>White respondents served as the reference group in all models.

<sup>h</sup>For PTSD, Model 1 adjusted for age and sex and included all respondents, regardless of TE exposure. Model 2 adjusted for age, sex, and age at exposure to worst TE and was estimated only among respondents with a lifetime TE. Model 3 adjusted for age, sex, age at exposure to worst TE, and a count of the number of cumulative TEs experienced prior to the worst TE, and was estimated only among respondents with a lifetime TE. Model 4 adjusted for age, sex, age at exposure to worst TE, a count of the number of cumulative TEs experienced prior to the worst TE, and onset of other mental disorders prior to the worst TE, and was estimated only among respondents with a lifetime TE. Model 5 adjusted for age, sex, age at exposure to worst TE, and type of worst TE and was estimated only among respondents with a lifetime TE.

\**p* ≤ 0.05.

**Table 4.** Interactions between race/ethnicity and TE types in predicting PTSD ( $n = 13\ 775$ )

	Asian % (s.e.) OR (95% CI) <sup>a</sup>	Black % (s.e.) OR (95% CI) <sup>a</sup>	Latino % (s.e.) OR (95% CI) <sup>a</sup>	White % (s.e.) OR (95% CI)	F p value
Rape/sexual assault <sup>b</sup>	3.61 (0.48) 0.63 (0.23–1.73)	6.23 (0.46) 1.08 (0.73–1.60)	3.81 (0.34) 0.75 (0.33–1.69)	6.65 (0.49) –	0.59 $p = 0.62$
Private/undisclosed TE <sup>b</sup>	1.30 (0.32) 1.11 (0.25–4.95)	1.63 (0.26) 2.24 (0.85–5.91)	1.33 (0.32) 1.23 (0.15–10.48)	2.19 (0.27) –	0.99 $p = 0.40$
All other TEs <sup>b</sup>	95.09 (0.64) 0.42* (0.22–0.79)	92.15 (0.50) 1.17 (0.92–1.50)	94.86 (0.44) 0.80 (0.52–1.21)	91.17 (0.56) –	11.42 $p = 0.012$

<sup>a</sup>Models were estimated using logistic regression.

<sup>b</sup>The proportion of respondents exposed to at least one lifetime TE that endorsed the focal TE as their worst lifetime TE.

\* $p \leq 0.05$ .

differences were no longer significant for agoraphobia among Blacks (OR = 0.85) and for alcohol and drug abuse/dependence among Latinos (ORs = 0.78–0.81) relative to Whites. No interactions were observed between race/ethnicity and TEs in predicting disorder onset.

If racial/ethnic differences were reduced among those with no TE exposure, it would suggest lower vulnerability to trauma-related psychopathology among racial/ethnic minorities relative to Whites. We found little evidence for this in model 5, which examined associations of race/ethnicity with disorder onset among respondents without lifetime exposure to the TE types included in earlier models (Table 3). Asian respondents had significantly reduced odds of all disorders except for agoraphobia (ORs = 0.20–0.53), Black respondents had reduced odds of every disorder (ORs = 0.32–0.68), and Latino respondents had lower odds of all but GAD and alcohol abuse/dependence (ORs = 0.54–0.69) relative to Whites.

#### Racial/ethnic differences in lifetime PTSD

Both Asian (OR = 0.26) and Latino (OR = 0.63) respondents had lower odds of lifetime PTSD than Whites in a model that did not adjust for TEs (Table 3). These differences were similar in magnitude among those with a lifetime TE (ORs = 0.31–0.69), after adjusting for cumulative TE exposure (ORs = 0.35–0.66), and in a model adjusting for each respondent's worst lifetime TE and age of TE exposure (ORs = 0.40–0.75). After controlling for mental disorders occurring prior to the worst TE, Asians continued to exhibit lower odds of lifetime PTSD than Whites (OR = 0.42) but Latinos did not (OR = 0.75). Although Blacks and Whites had similar odds of PTSD in most models (ORs = 1.04–1.12), when prior-onset mental disorders were adjusted for in model 4, Blacks had *higher* odds of lifetime PTSD than Whites (OR = 1.25).

In the final model, race/ethnicity interacted with TE type in predicting PTSD ( $F_{21,119} = 18.08$ ,  $p < 0.001$ ) driven by two TEs whose association with PTSD exhibited a different pattern of racial/ethnic variation than other TEs: rape/sexual assault and unidentified events (i.e. events the respondent did not want to discuss with the interviewer). The association of rape/sexual assault ( $F_{3,137} = 0.59$ ,  $p = 0.62$ ) and unidentified events ( $F_{3,137} = 0.99$ ,  $p = 0.40$ ) with PTSD did not differ across racial/ethnic groups. In contrast, the association of all other TE types with PTSD varied by race/ethnicity ( $F_{3,137} = 3.80$ ,  $p = 0.012$ ), with Asians exhibiting lower risk of PTSD following TE exposure (OR = 0.42) and Blacks and Latinos exhibiting similar risk (OR = 0.80–1.17) as Whites (Table 4).

#### Discussion

We investigated the possibility that racial/ethnic differences in exposure to TEs or in vulnerability to psychopathology following TE exposure might contribute, in part, to lower rates of psychopathology among racial/ethnic minorities than Whites. Although lifetime prevalence of TE exposure varied across racial/ethnic groups, no racial/ethnic group experienced consistently elevated or reduced rates of TE exposure across all TE types. In terms of vulnerability to trauma-related psychopathology, racial/ethnic differences in the onset of depression, anxiety, and substance disorders following TEs were minimal. In contrast, racial/ethnic variation in conditional risk of PTSD emerged for most TE types such that Asians had lower odds of developing PTSD and Blacks had higher odds of developing PTSD following a TE than Whites. These findings suggest that increased resilience following TEs is not a major factor explaining the lower prevalence of mental disorders among racial/ethnic minorities as compared with Whites, with the exception of PTSD among Asians.

Prior research examining racial/ethnic differences in exposure to TEs has largely relied on geographically limited community samples or studies of specific TE types (e.g. natural disaster, assaultive violence); these studies have produced inconsistent findings with regard to racial/ethnic variation in the prevalence of exposure to particular types of TEs (Kilpatrick and Acierno, 2003; Hatch and Dohrenwend, 2008). Here, racial/ethnic differences in TE exposure were observed across all TE types, and the patterns align closely with a prior US population-based study (Roberts *et al.*, 2011). Asians were most likely to experience TEs involving exposure to organized violence, particularly being a refugee, but had the lowest rates of exposure to all other TE types and the lowest rates of cumulative TE exposure. Being displaced from one's native country often occurs in the context of political violence and involves cumulative experiences of stress and adversity following resettlement (Silove, 1999; Fazel *et al.*, 2012). Refugees have consistently been found to have elevated rates of psychopathology as compared with non-displaced people (Porter and Haslam, 2005). Yet, Asian Americans had the lowest prevalence of psychopathology of any group; this could reflect that the likelihood of being a refugee was not high in an absolute sense among Asians (12.4%) despite being relatively more common than in other groups (0.5–3.8%) or could be related to the substantially lower rates of exposure to other TE types among Asians relative to other racial/ethnic groups. Black and Latino respondents had the highest prevalence of exposure to most forms of interpersonal violence, with the rates of participation in organized violence and sexual violence highest among Blacks

and exposure to physical violence greatest among Latinos. Higher levels of exposure to violence among Black and Latino adults as compared with Whites have been reported in several prior studies, although physical and sexual violence were not differentiated (Breslau *et al.*, 1998; Roberts *et al.*, 2011). In contrast, Whites had the greatest exposure to accidents and injuries, also consistent with prior work (Roberts *et al.*, 2011). Given that Black and Latino adults were most likely to experience the types of TEs that are most strongly associated with psychopathology (i.e. physical and sexual violence) (Kessler *et al.*, 1995; Breslau *et al.*, 1998; Liu *et al.*, 2017), differences in TE exposure in these groups is unlikely to contribute to their lower rates of psychopathology relative to Whites.

We found little evidence for racial/ethnic variation in vulnerability to trauma-related psychopathology other than PTSD. Consistent with prior research, Black, Latino, and Asian adults were less likely to develop depression, anxiety, and substance disorders than Whites (Breslau *et al.*, 2005, 2006; Gilman *et al.*, 2008). Racial/ethnic variation in vulnerability to psychopathology following TEs did not explain these differences. First, the magnitude of racial/ethnic differences in disorder onset was virtually unchanged after accounting for TE exposure. Second, we found no interactions between race/ethnicity and TE exposure in predicting disorder onset, suggesting an absence of racial/ethnic variability in risk for psychopathology following TEs. The lack of racial/ethnic differences in vulnerability to trauma-related psychopathology is consistent with a prior study suggesting an absence of racial/ethnic differences in the association of stressful life events with anxiety and depression onset (Turner and Lloyd, 2004). Finally, racial/ethnic differences remained unchanged in the sample who had never experienced lifetime TEs associated with the disorder outcome of interest, where group differences would have been smaller had variation in trauma-related vulnerability been a meaningful factor underlying racial/ethnic differences in disorder onset. Racial/ethnic differences in disorder onset were attenuated for some disorders after controlling for prior-onset mental disorders, suggesting that elevated comorbidity may play a role in the greater odds of adult-onset psychopathology among Whites relative to other racial/ethnic groups. Altogether, greater resilience to TEs does not appear to play a role in explaining the lower rates of depression, anxiety, and substance disorders among Black, Latino, and Asian Americans as compared with Whites.

The pattern of racial/ethnic differences in PTSD differed from other forms of psychopathology. The odds of lifetime PTSD were lower among Asians and Latinos but *higher* among Blacks than Whites. These findings are consistent with several prior studies reporting greater lifetime prevalence of PTSD among Blacks and lower prevalence among Asians relative to Whites (Norris, 1992; Roberts *et al.*, 2011; Alegria *et al.*, 2013). Lower odds of PTSD for Asians and Latinos relative to Whites persisted when examined only among those with a lifetime TE and after controlling for cumulative TE exposure and remained significant only for Asians after adjusting for the type and age-of-onset of each respondent's worst TE. This pattern suggests that the lower odds of PTSD among Asians is not explained by differences in the types of TEs experienced or the number of lifetime TEs. In contrast, Black respondents had higher odds of lifetime PTSD than Whites. This difference was not significant in models that adjusted for the type, number, and age-of-onset of TEs but emerged after adjustment for the presence of psychopathology occurring prior to the worst TE. This pattern suggests that elevated lifetime odds of PTSD among Blacks relative to Whites is not explained by differences in TE exposure and is magnified

after accounting for the fact that Whites are more likely to have co-occurring forms of psychopathology than Blacks, which is a known risk factor for PTSD (Koenen *et al.*, 2008). Mechanisms underlying this elevated risk of PTSD following TE exposure are unknown, although one possibility is that greater exposure to discrimination and other forms of adversity among Blacks relative to Whites magnifies vulnerability to developing PTSD following a TE (Brewin *et al.*, 2000; Loo *et al.*, 2005; McLaughlin *et al.*, 2010, 2017). This possibility warrants exploration in future studies.

Several limitations are worth noting. First, exposure to TEs, disorder age-of-onset, and symptoms were assessed retrospectively. Recall bias produces lower disorder prevalence estimates in retrospective than prospective studies (Moffitt *et al.*, 2010; Takayanagi *et al.*, 2014). If recall biases varied by race/ethnicity, they could have contributed to group differences in psychopathology, although there is little evidence to suggest that such biases play a meaningful role in the lower rates of psychopathology among racial/ethnic minorities. Second, conditional risk of PTSD was examined only in relation to the TE endorsed as the worst. Assessing PTSD in relation to a worst event rather than a randomly selected event has been shown to inflate lifetime prevalence estimates in several studies (Kessler *et al.*, 1995; Breslau *et al.*, 1998). Examining racial/ethnic differences in PTSD in relation to a randomly selected event is an important goal for future studies. Dropping the non-White respondents from the NCS-R sample in the pooled CPES dataset limited power to detect racial/ethnic differences. The consistent racial/ethnic differences observed, however, temper this concern. Finally, we did not have sufficient power to examine racial/ethnic differences in TE-disorder associations across subgroups of Blacks, Latinos, and Asians based on ethnicity and nativity, which have been associated with psychopathology in prior studies (Alegria *et al.*, 2007; Williams *et al.*, 2007).

Lower prevalence of lifetime mental disorders among racial/ethnic minorities does not appear to reflect reduced vulnerability to TEs, with the exception of lower vulnerability to PTSD among Asians. A similar pattern of racial/ethnic differences was found for depression, anxiety, and substance disorders in those with and without a lifetime TE and after adjusting for group differences in TE exposure, and interactions between race/ethnicity and TEs in predicting disorder onset were largely absent. For PTSD, Blacks exhibited greater vulnerability to PTSD following TEs than Whites, further underscoring that greater resilience to TEs among racial/ethnic minorities is not a plausible explanation for the generally lower rates of psychopathology experienced among these groups relative to Whites. These results highlight the importance of investigating other potential mechanisms underlying racial/ethnic differences in psychopathology.

**Supplementary material.** The supplementary material for this article can be found at <https://doi.org/10.1017/S0033291718003082>.

**Acknowledgements.** Research reported in this publication was supported by the National Institute on Minority Health and Health Disparities (NIMHD) of the National Institutes of Health under Award Number R01MD009719. Dr Kiara Alvarez is supported by the National Institute of Mental Health (NIMH) under Award Number K23MH112841. Dr Jackson is supported by the NIMHD Center for Integrative Approaches to Health Disparities (P60-MD002249). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

**Disclosure statement.** In the past 3 years, Dr. Kessler received support for his epidemiological studies from Sanofi Aventis; was a consultant for Johnson

& Johnson Wellness and Prevention, Sage Pharmaceuticals, Shire, Takeda; and served on an advisory board for the Johnson & Johnson Services Inc. Lake Nona Life Project. Kessler is a co-owner of DataStat, Inc., a market research firm that carries out healthcare research.

## References

- Alegria M, Takeuchi D, Canino D, Duan N, Shrout P, Meng XL, Vega W, Zane N, Vila D and Woo M (2004) Considering context, place and culture: the National Latino and Asian American Study. *International Journal of Methods in Psychiatric Research* **13**, 208–220.
- Alegria M, Mulvaney-Day N, Torres M, Polo A, Cao Z and Canino G (2007) Prevalence of psychiatric disorders across Latino subgroups in the United States. *American Journal of Public Health* **97**, 68–75.
- Alegria M, Fortuna LR, Lin JY, Norris LF, Gao S, Takeuchi DT, Jackson JS, Shrout PE and Valentine A (2013) Prevalence, risk, and correlates of post-traumatic stress disorder across ethnic and racial minority groups in the US. *Medical Care* **51**, 1114–1123.
- Basoglu M, Mineka S, Paker M, Aker T, Livanou M and Gok S (1997) Psychological preparedness for trauma as a protective factor in survivors of torture. *Psychological Medicine* **27**, 1421–1433.
- Breslau N, Davis GC, Andreski P and Peterson EL (1991) Traumatic events and posttraumatic stress disorder in an urban population of young adults. *Archives of General Psychiatry* **48**, 216–222.
- Breslau N, Kessler RC, Chilcoat HD, Schultz LR, Davis GC and Andreski P (1998) Trauma and posttraumatic stress disorder in the community: the 1996 Detroit area survey of trauma. *Archives of General Psychiatry* **55**, 626–632.
- Breslau J, Kessler RC, Su M, Gaxiola-Aguilar S and Kessler RC (2005) Lifetime risk and persistence of psychiatric disorders across ethnic groups in the United States. *Psychological Medicine* **35**, 317–327.
- Breslau J, Aguilar-Gaxiola S, Kessler RC, Su M, Williams DR and Kessler RC (2006) Specifying race-ethnic differences in risk for psychiatric disorder in a US national sample. *Psychological Medicine* **36**, 57–68.
- Brewin CR, Andrews B and Valentine JD (2000) Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *Journal of Consulting and Clinical Psychology* **68**, 748–766.
- Fazel M, Reed RV, Pnater-Brick C and Stein A (2012) Mental health of displaced and refugee children resettled in high-income countries: risk and protective factors. *Lancet* **379**, 266–282.
- First M, Spitzer RL, Gibbon M and Williams JBW (2002) *Structured Clinical Interview for DSM-IV Axis I Disorders, Research Version, Non-Patient Edition (SCID-I/NP)*. New York, NY: Biometrics Research, New York State Psychiatric Institute.
- Gilman SE, Breslau J, Conron KJ, Koenen KC, Subramanian SV and Zaslavsky AM (2008) Education and race-ethnicity differences in the lifetime risk of alcohol dependence. *Journal of Epidemiology and Community Health* **62**, 224–230.
- Hatch SL and Dohrenwend BP (2008) Distribution of traumatic and other stressful life events by race/ethnicity, gender, SES and age: a review of the research. *American Journal of Community Psychology* **40**, 313–332.
- Hatzenbuehler ML, Phelan JC and Link BG (2013) Stigma as a fundamental cause of population health inequalities. *American Journal of Public Health* **103**, 813–821.
- Heeringa SG, Wagner J, Torres M, Duan N, Adams T and Berglund P (2004) Sample designs and sampling methods for the Collaborative Psychiatric Epidemiology Studies (CPES). *International Journal of Methods in Psychiatric Research* **13**, 221–240.
- Jackson JS, Torres M, Caldwell CH, Neighbors HW, Nesse RM, Taylor RJ, Trierweiler SJ and Williams DR (2004) The National Survey of American Life: a study of racial, ethnic and cultural influences on mental disorders and mental health. *International Journal of Methods in Psychiatric Research* **13**, 196–207.
- Kessler RC and Merikangas KR (2004) The National Comorbidity Survey Replication (NCS-R): background and aims. *International Journal of Methods in Psychiatric Research* **13**, 60–68.
- Kessler RC and Üstun TB (2004) The World Mental Health (WHM) Survey Initiative Version of the World Health Organization (WHO) Composite International Diagnostic Interview (CIDI). *International Journal of Methods in Psychiatric Research* **13**, 93–121.
- Kessler RC, Sonnega A, Bromet E, Hughes M and Nelson CB (1995) Posttraumatic stress disorder in the National Comorbidity Survey. *Archives of General Psychiatry* **52**, 1048–1060.
- Kessler RC, Mickelson KD and Williams DR (1999) The prevalence, distribution, and mental health correlates of perceived discrimination in the United States. *Journal of Health and Social Behavior* **40**, 208–230.
- Kessler RC, Berglund P, Demler O, Jin R, Merikangas KR and Walters EE (2005) Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry* **62**, 593–602.
- Kilpatrick DG and Acierno R (2003) Mental health needs of crime victims: epidemiology and outcomes. *Journal of Traumatic Stress* **16**, 119–132.
- Koenen KC, Moffitt TE, Caspi A, Gregory A, Harrington H and Poulton R (2008) The developmental mental-disorder histories of adults with post-traumatic stress disorder: a prospective longitudinal birth cohort study. *Journal of Abnormal Psychology* **117**, 460–466.
- Lewis TT, Cogburn CD and Williams DR (2015) Self-reported experience of discrimination and health: scientific advances, ongoing controversies, and emerging issues. *Annual Review of Clinical Psychology* **11**, 407–440.
- Liu H, Petukhova N, Sampson NA, Aguilar-Gaxiola S, Alonso J, Andrade LH, Bromet EJ, de Girolamo D, Haro JM, Hinkov H, Kawakami N, Koenen KC, Kovess-Masfety V, Lee S, Medina-Mora ME, Navarro-Mateu F, O'Neill S, Piazza M, Posada-Villa J, Scott KM, Shahly V, Stein DJ, ten Have M, Torres Y, Gureje O, Zaslavsky A and Kessler RC (2017) Association of DSM-IV post-traumatic stress disorder with traumatic experience type and history in the World Health Organization World Mental Health Surveys. *JAMA Psychiatry* **74**, 270–281.
- Loo CM, Fairbank JA and Chemtob CM (2005) Adverse race-related events as a risk factor for posttraumatic stress disorder in Asian American Vietnam veterans. *Journal of Nervous and Mental Disease* **193**, 455–463.
- McLaughlin KA, Conron KJ, Koenen KC and Gilman SE (2010) Childhood adversity, adult stressful life events, and risk of past-year psychiatric disorder: a test of the stress sensitization hypothesis in a population-based sample of adults. *Psychological Medicine* **40**, 1647–1658.
- McLaughlin KA, Koenen KC, Bromet EJ, Karam EG, Liu H, Petukhova N, Ruscio AM, Sampson NA, Stein DJ, Aguilar-Gaxiola A, Alonso J, Borges G, Demyttenaere K, Dinolova RV, Ferry F, Florescu S, de Girolamo G, Gureje O, Kawakami N, Lee S, Navarro-Mateu F, Piazza M, Pennell B-E, Posada-Villa J, ten Have M, Viana MC and Kessler RC (2017) Childhood adversities and post-traumatic stress disorder: evidence for stress sensitization in the World Mental Health Surveys. *British Journal of Psychiatry* **211**, 280–288.
- Moffitt TE, Caspi A, Taylor A, Kokaua J, Milne B, Polanczyk G and Poulton R (2010) How common are common mental disorders? Evidence that lifetime prevalence rates are doubled by prospective versus retrospective ascertainment. *Psychological Medicine* **40**, 899–909.
- Molina KM, Alegria M and Chih-Nan C (2012) Neighborhood context and substance use disorders: a comparative analysis of racial and ethnic groups in the United States. *Drug and Alcohol Dependence* **125**(suppl. 1), S35–S43.
- Norris FH (1992) Epidemiology of trauma: frequency and impact of different potentially traumatic events on different demographic groups. *Journal of Consulting and Clinical Psychology* **60**, 409–418.
- Pennell BE, Bowers A, Carr D, Chardoul S, Cheung G-Q, Dinkelmann K, Gebler N, Hansen SE, Pennell S and Torres M (2004) The development and implementation of the National Comorbidity Survey Replication, the National Survey of American Life, and the National Latino and Asian American Survey. *International Journal of Methods in Psychiatric Research* **13**, 241–269.
- Porter M and Haslam N (2005) Predisplacement and postdisplacement factors associated with mental health of refugees and internally displaced persons: a meta-analysis. *JAMA* **294**, 602–612.
- Roberts AL, Gilman SE, Breslau J, Breslau N and Koenen KC (2011) Race/ethnic differences in exposure to traumatic events, development of post-traumatic stress disorder, and treatment-seeking for post-traumatic stress disorder in the United States. *Psychological Medicine* **41**, 71–83.

- SAS Institute Inc.** (2008). SAS Software Version 9.2.
- Silove D** (1999) The psychosocial effects of torture, mass human rights violations, and refugee trauma: toward an integrated conceptual framework. *Journal of Nervous and Mental Disease* **187**, 200–207.
- Singer JD and Willett JB** (1993) It's about time: using discrete-time survival analysis to study duration and timing of events. *Journal of Educational Statistics* **18**, 155–195.
- Takayanagi Y, Spira AP, Roth KB, Gallo JJ, Eaton WW and Mojtabai R** (2014) Accuracy of reports of lifetime mental and physical disorders: results from the Baltimore Epidemiological Catchment Area study. *JAMA Psychiatry* **71**, 273–280.
- Turner RJ and Lloyd DA** (2004) Stress burden and lifetime incidence of psychiatric disorders in young adults: racial and ethnic contrasts. *Archives of General Psychiatry* **61**, 481–488.
- Walsh K, McLaughlin KA, Hamilton A and Keyes KM** (2017) Trauma exposure, incident psychiatric disorders, and disorder transitions in a longitudinal population representative sample. *Journal of Psychiatric Research* **92**, 212–218.
- Williams DR, Neighbors HW and Jackson JS** (2003) Racial/ethnic discrimination and health: findings from community studies. *American Journal of Public Health* **93**, 200–208.
- Williams DR, Haile R, Gonzalez HM, Neighbors H, Baser R and Jackson JS** (2007) The mental health of Black Caribbean immigrants: results from the National Survey of American Life. *American Journal of Public Health* **97**, 52–59.
- Wolter KM** (1985) *Introduction to Variance Estimation*. New York, NY: Springer-Verlag.