

Extended Abstract Submission for the  
Population Association of America Annual Meeting 2015

**Please do not circulate**

Risk of Trauma Exposure and Posttraumatic Stress Disorder: An Examination of the Separate  
and Combined Effects of Race, Gender, and Poverty Status

Lori R. Wallace, Yale University  
Rachel C. Snow, University of Michigan  
Arline T. Geronimus, University of Michigan

## **Introduction**

In the thirty-plus years since post-traumatic stress disorder (PTSD) was first recognized as a psychiatric diagnosis, most of the epidemiological research on the disorder has focused on individual-level factors. That is, on understanding the relationship between specific traumatic exposures, demographic factors such as gender and age, and risk of meeting the diagnostic criteria of the disorder. Little attention has been paid to understanding the relationship between traumatic exposures and the larger social environment in which these exposures occur, despite the fact that the defining criterion for a PTSD diagnosis is an exposure to an external traumatic stressor. The lack of research on the role of social context represents a major shortcoming of the PTSD literature and has served to limit our understanding of population differences in the prevalence and risk of the disorder.

## **Gender Differences in Traumatic Exposure and PTSD**

One of the most consistently reported results in the epidemiological literature on PTSD is the finding that females experience approximately two times greater risk of PTSD compared to males (Breslau, N., Chilcoat, Kessler, Peterson, & Lucia, 1999; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Tolin & Foa, 2008). This finding has been reported in relation to U.S.-based samples (Breslau, N., 2009; Breslau, N et al., 1998; Brewin, C.R., Andrews, & Valentine, 2000; Himle et al., 2009) and has also been shown to apply more globally. For example, using data from the World Health Organization's (WHO) 2002 estimates of the Global Burden of Disease, Snow (2010) reported that the global DALYs associated with PTSD was over 2 ½ times greater for females than for males.

This is so despite the fact that researchers have also consistently found that the overall lifetime prevalence of exposure to any traumatic event is greater for males than females (Breslau, Davis et al. 1991, Norris 1992, Kessler, Sonnega et al. 1995, Breslau, Kessler et al. 1998, Breslau, Chilcoat et al. 1999), though variation has been found in the prevalence of experiencing particular types of traumatic stressors, particularly sexual violence exposures like rape and sexual assault. This finding has led to a debate in the literature about whether females' greater risk of PTSD is a generalized vulnerability or whether it is due to this greater risk of sexual violence exposure. Breslau et al. (1999) aimed to address this question in their study of sex differences in trauma exposure and PTSD risk by examining the conditional risk of PTSD for males and females by exposure type, based on randomly chosen traumas. They looked at the distribution of PTSD cases attributed to each exposure type for males and females, respectively, in an effort to better understand how females' PTSD risk varied across individual traumatic exposures and traumatic exposure types, as well as which individual exposures and exposure types were associated with the greatest risk of PTSD in each group. The results of this analysis showed that the overall sex difference in risk of PTSD could be attributed to females' greater exposure to assaultive violence, with the conditional risk of PTSD due to assaultive violence being greater among females than among males (35.7% vs. 6.0%,  $z = 3.41$ ,  $p < 0.001$ ), and a higher proportion of female PTSD cases (54.1%, SE = 6.7) than male PTSD cases (15.4%, SE = 7.8) attributable to this exposure. However, the results of the latter analysis also showed that females' greater risk of PTSD was only partially due to their greater exposure to sexual violence, with assaultive violence exposures like being badly beaten also contributing to this result.

Similarly, in a later meta-analysis of sex differences in PTSD, Tolin and Foa examined male-female differences in the risk of PTSD associated with different exposure types across multiple studies in an effort to understand whether sex differences would still be evident after controlling for the type of trauma (Tolin and Foa 2008). Based on this analysis, researchers ruled out the hypothesis that females' greater PTSD risk was due solely to a higher risk of adult sexual assault or child sexual abuse, finding no differences between males and females in PTSD due to child sexual abuse, nonsexual child abuse or neglect and adult sexual assault. However, researchers also extended this analysis by examining sex differences in risk within the categories of traumatic exposures endorsed more frequently by males (i.e., accidents, nonsexual assault, combat or war, disasters, witnessing death or injury, and serious illness) and found that females experienced greater frequency and severity of PTSD in relation to all of these exposures. Taken together, the results of this meta-analysis led Tolin and Foa to conclude that the greater risk of PTSD experienced by female participants seems to cut across traumatic exposure categories (Tolin and Foa 2008).

Nevertheless, an important issue that has not been considered in this debate is that all of the conclusions about male-female differences in PTSD risk appear to have been based on the findings of studies that examine gender in isolation from the effects of other key social characteristics like race and contextual factors such as poverty status. Thus, the primary aim of this study is to address this gap in the research by providing a better understanding of the prevalence and risk of trauma exposure and PTSD by race, gender, and poverty status.

### **Data and Methods**

To accomplish this aim, this study will use data from a representative sample of the U.S. African American and non-Hispanic White populations in the Collaborative Psychiatric Epidemiology Surveys (CPES), a combined dataset comprised of three nationally representative companion surveys—the National Comorbidity Study Replication (NCS-R), the National Survey of American Life (NSAL), and the National Latino and Asian American Study (NLAAS) (NIMH CPES, 2001-2003).

The outcome variable for this analysis is lifetime PTSD, a binary variable that was created to capture whether a respondent ever endorsed a diagnosis of posttraumatic stress disorder in their lifetime, based on the diagnostic criteria set forth in the DSM-IV (American Psychiatric Association 1994). The prevalence of trauma exposure and the conditional risk of lifetime PTSD were examined separately in relation to 7 traumatic exposure categories. These categories were created by grouping twenty-nine individual traumatic exposures into seven mutually exclusive exposure categories based on categorizations that have been used in previous studies and reported in the PTSD literature (Roberts, Gilman et al. 2010). Each traumatic exposure category was treated as a binary variable that was coded to '1' if the respondent reported that he/she had ever experienced a traumatic exposure of a given type and coded to '0' if he/she reported never experiencing any of the exposures associated with that exposure category. An eighth 'Any Exposure' category was also created as a catchall category representing all respondents who experienced at least one traumatic exposure.

The analyses reported in this paper were conducted first by examining the univariate and bivariate distributions of the variables of interest in the combined analysis sample to assess which predictors were significantly associated with the outcome based on the design-adjusted

Rao-Scott Chi Square test statistic. The prevalence of trauma exposure and PTSD was assessed by examining the univariate distributions of the variables representing each of the seven traumatic exposure categories and the 'Any Exposure' variable in the combined non-Hispanic White and African American sample, as well as the sample stratified by race, gender, and poverty status, respectively. The conditional risk of PTSD was examined by running crosstabulations between the PTSD outcome variable and the variables representing each of the seven exposure categories, including the catchall 'Any Exposure' category. Each crosstabulation between a given exposure category variable and the outcome variable was examined in the sample of respondents who reported experiencing at least 1 exposure of that respective exposure type, or in the case of the catchall exposure category, in the sample of respondents who reported experiencing at least 1 traumatic exposure, as well as in these samples stratified by race and gender, by race-gender subgroups, and by race-gender subgroups stratified by poverty status.

### **Study Findings**

The prevalence estimates of traumatic exposure by gender (not shown) showed that, similar to the results reported in previous studies, the prevalence of exposure to any trauma was significantly greater among male respondents than among female respondents. Eighty-seven percent (86%) of the male sample reported experiencing at least one traumatic exposure compared to 82% of the female sample, a difference that was highly significant ( $F(1, 76) = 7.26, p = 0.008$ ). Estimates of the conditional risk of lifetime PTSD due to given categories of traumatic exposures are presented in Table 1, which clearly shows that females experience significantly greater conditional risk of lifetime PTSD due to every exposure type compared to their male counterparts. This is so, despite the fact that the prevalence estimates associated with 3 out of 7 exposure types were significantly greater among male respondents. All of the findings of male-female differences in PTSD risk associated with the 7 traumatic exposure types were either significant ( $p < 0.05$ ) or highly significant ( $p < 0.001$ ).

An examination of the conditional risk of lifetime PTSD by race revealed significant differences in risk of PTSD between African Americans and Non-Hispanic Whites due to any exposure as well as in relation to two exposure types. The results of this analysis, which are presented in Table 2, show that compared to Non-Hispanic Whites, African Americans have significantly greater risk of PTSD due to any exposure (10% vs. 8%),  $F(1, 76) = 7.83, p = 0.007$ , war-related exposures (11% vs. 6%),  $F(1, 75) = 5.95, p = 0.017$  and due to exposures associated with injuries and other shocking events (12% vs. 8%),  $F(1, 76) = 11.38, p = 0.001$ . This was so, even despite the fact that African Americans were found to have significantly lower prevalence of the latter exposure and a similar prevalence of war-related exposures compared to non-Hispanic Whites (estimates not shown). When the effects of race and gender are considered together, significant gender differences in the conditional risk of PTSD are no longer observed across all traumatic exposures. As the estimates in Table 3 show, a non-significant difference in risk due to unnamed traumatic exposures was found for African American males and females and a borderline significant difference in risk ( $\alpha = 0.05$ ) was found for non-Hispanic White males and females due to war-related traumatic exposures. When the estimates by race and gender are further stratified by poverty status, more non-significant gender differences emerge. For example, as the estimates for respondents living below poverty level in Table 4.1 shows, non-

Hispanic White females no longer experience greater risk than white males across all traumatic exposures and non-Hispanic White males now experience greater risk due to unnamed traumatic exposures, but this difference is not significant. Similarly, African American females living below poverty also no longer experience greater risk across all traumas, though there are more significant differences in risk compared to their non-Hispanic White counterparts.

Conversely, the estimates for the sample living above poverty level show that, similar to the estimate found for gender alone, significant gender differences can once again be observed among non-Hispanic White males and females, with non-Hispanic White females experiencing greater risk than non-Hispanic White males in relation to all but one exposure, war-related exposures, which was associated with a difference that was borderline significant ( $\alpha = 0.05$ ). However, among African American males and females living above poverty level, non-significant differences can still be observed in relation to 3 traumatic exposures (i.e., war-related traumas, child maltreatment, an unnamed traumas). And while, the magnitude of the gender difference in risk appears to be more pronounced for African American females above poverty in relation to the other 5 traumas, if you compare the estimates for African American females above and below poverty and African American males above and below poverty, it appears that the magnitude of this difference has more to do with the relative decrease in risk experienced by African American males above poverty than an increase in the magnitude of African American females' risk. Furthermore, the non-significant differences that were found in relation to the 3 aforementioned traumas seem to be driven by a decrease in risk experienced by African American females

Taken together, these findings would suggest that the most consistently reported finding in the PTSD literature, that of females' greater PTSD risk, likely masks important differences that exist across other key socio-demographic dimensions. This would suggest that to truly understand the impact of risk factors like gender on the conditional risk of PTSD, the combined effects of other demographic and contextual factors must also be considered.

**Table 1. Conditional Risk of Lifetime PTSD due to Traumatic Exposure by Exposure Type and Gender**

Traumatic Exposure Type	Females n = 4,221		Males n =2,854		OR	p
	%	SE	%	SE		
Any Exposure	12.26	0.8	4.33	0.3	3.09	<b>0.000</b>
War-Related/Atrocities	10.69	2.1	5.73	1.0	1.97	<b>0.023</b>
Assaultive Violence	24.38	1.9	7.14	0.8	4.19	<b>0.000</b>
Sexual Violence	22.83	1.8	10.38	1.8	2.56	<b>0.000</b>
Childhood Maltreatment	21.02	2.2	11.55	1.4	2.04	<b>0.002</b>
Injuries/Other Shocking						
Events	13.29	0.9	4.64	0.4	3.15	<b>0.000</b>
Traumas to Others	13.45	1.0	5.66	0.4	2.60	<b>0.000</b>
Other/Unnamed Traumas	23.75	2.2	10.48	2.0	2.66	<b>0.000</b>

**Table 2. Conditional Risk of Lifetime PTSD due to Given Exposure Types by Race**

Traumatic Exposure Type	African Americans n = 3,445		Non-Hispanic Whites n = 3,630		OR	p
	%	SE	%	SE		
Any Exposure	10.44	0.6	8.14	0.6	1.32	<b>0.008</b>
War-Related/Atrocities	11.00	1.6	6.26	1.0	1.85	<b>0.014</b>
Assaultive Violence	14.52	1.2	14.61	1.2	0.99	0.958
Sexual Violence	22.04	1.4	19.6	1.9	1.16	0.322
Childhood Maltreatment	18.04	1.4	16.73	1.4	1.09	0.546
Injuries/Other Shocking						
Events	11.60	0.8	8.12	0.7	1.48	<b>0.001</b>
Traumas to Others	11.28	0.7	9.74	0.7	1.18	0.133
Other/Unnamed Traumas	19.38	2.2	17.16	2.3	1.16	0.492

**Table 3. Conditional Risk of Lifetime PTSD due to Given Traumatic Exposure Types by Race and Gender**

	African American Females n = 2,185		Non-Hispanic White Females n = 2,036		African American Females vs. Non-Hispanic White Females		African American Females vs. African American Males	
	%	SE	%	SE	OR	<i>p</i>	OR	<i>p</i>
Any Exposure	14.49	0.8	11.92	0.9	1.25	<b>0.037</b>	2.91	<b>0.000</b>
War-Related/Atrocities	21.8	3.8	9.46	2.3	2.67	<b>0.006</b>	3.00	<b>0.001</b>
Assaultive Violence	22.41	1.8	24.81	2.2	0.88	0.405	3.69	<b>0.000</b>
Sexual Violence	24.43	1.6	22.56	2.1	1.11	0.484	2.02	<b>0.001</b>
Childhood Maltreatment	21.55	2.3	20.91	2.7	1.04	0.860	1.96	<b>0.014</b>
Injuries/Other Shocking Events	17.44	1.2	12.67	1.0	1.46	<b>0.004</b>	3.21	<b>0.000</b>
Traumas to Others	14.79	1.0	13.24	1.2	1.14	0.306	2.49	<b>0.000</b>
Other/Unnamed Traumas	21.95	2.9	23.99	2.5	0.89	0.594	1.49	0.135

  

	African American Males n = 1,260		Non-Hispanic White Males n = 1,594		African American Males vs. Non-Hispanic White Males		Non-Hispanic White Females vs. Non-Hispanic White Males	
	%	SE	%	SE	OR	<i>p</i>	OR	<i>p</i>
Any Exposure	5.5	0.7	4.18	0.4	1.33	<b>0.083</b>	3.10	<b>0.000</b>
War-Related/Atrocities	8.49	1.7	5.36	1.2	1.64	0.128	1.84	<b>0.083</b>
Assaultive Violence	7.26	1.2	7.13	0.9	1.02	0.934	4.30	<b>0.000</b>
Sexual Violence	13.82	2.3	9.82	2.0	1.47	0.188	2.68	<b>0.000</b>
Childhood Maltreatment	12.39	2.1	11.4	1.6	1.09	0.742	2.05	<b>0.007</b>
Injuries/Other Shocking Events	6.17	0.8	4.44	0.4	1.41	<b>0.052</b>	3.12	<b>0.000</b>
Traumas to Others	6.53	0.9	5.54	0.5	1.20	0.313	2.62	<b>0.000</b>
Other/Unnamed Traumas	15.87	3.0	9.9	2.2	1.72	0.112	2.87	<b>0.000</b>

**Table 4.1 Conditional Risk of Lifetime PTSD due to Given Exposure Types by Gender, Race and Poverty Status:  
Below Poverty Level**

	African American Females n = 1,015		Non-Hispanic White Females n = 394		African American Females vs. Non-Hispanic White Females		African American Females vs. African American Males	
	%	SE	%	SE	OR	<i>p</i>	OR	<i>p</i>
Any Exposure	16.30	1.3	13.05	1.5	1.30	0.141	2.32	<b>0.001</b>
War-Related/Atrocities	34.6	6.2	11.45	6.2	4.09	<b>0.036</b>	2.89	<b>0.013</b>
Assaultive Violence	24.06	2.4	22.63	3.3	1.08	0.735	2.45	<b>0.003</b>
Sexual Violence	28.42	2.4	23.9	3.0	1.26	0.247	1.53	0.276
Childhood Maltreatment	24.84	2.3	24.52	4.6	1.01	0.953	1.86	0.109
Injuries/Other Shocking Events	19.43	1.9	13.89	1.9	1.50	<b>0.060</b>	2.64	<b>0.001</b>
Traumas to Others	16.56	1.8	13.88	2.0	1.23	0.340	1.99	<b>0.018</b>
Other/Unnamed Traumas	28.93	4.0	26.15	5.0	1.15	0.670	1.71	0.231

  

	African American Males n = 394		Non-Hispanic White Males n = 192		African American Males vs. Non-Hispanic White Males		Non-Hispanic White Females vs. Non-Hispanic White Males	
	%	SE	%	SE	OR	<i>p</i>	OR	<i>p</i>
Any Exposure	7.74	1.6	7.92	2.2	0.97	0.947	1.74	0.115
War-Related/Atrocities	15.47	4.3	8.77	4.3	1.90	0.313	1.35	0.712
Assaultive Violence	11.44	2.9	11.00	2.9	1.04	0.915	2.37	<b>0.028</b>
Sexual Violence	20.63	5.9	16.89	8.2	1.28	0.721	1.55	0.531
Childhood Maltreatment	15.07	4.4	16.99	5.4	0.87	0.784	1.59	0.382
Injuries/Other Shocking Events	8.35	2.0	9.8	2.7	0.84	0.109	1.48	0.248
Traumas to Others	9.07	2.1	12.24	3.4	0.72	0.770	1.16	0.680
Other/Unnamed Traumas	19.21	6.8	33.28	11.9	0.48	0.284	0.71	0.561



**Table 4.2 Conditional Risk of Lifetime PTSD due to Given Exposure Types by Gender, Race and Poverty Status:  
Above Poverty Level**

	African American Females n = 1,170		Non-Hispanic White Females n = 1,642		African American Females vs. Non-Hispanic White Females		African American Females vs. African American Males	
	%	SE	%	SE	OR	<i>p</i>	OR	<i>p</i>
	Any Exposure	13.03	1.1	11.64	1.0	1.14	0.341	3.10
War-Related/Atrocities	13.58	5.1	9.07	2.4	1.58	0.388	2.24	0.134
Assaultive Violence	20.68	2.6	25.65	2.9	0.76	0.191	4.58	<b>0.000</b>
Sexual Violence	21.25	2.2	22.19	2.9	0.95	0.797	2.21	<b>0.012</b>
Childhood Maltreatment	18.23	3.5	19.81	3.1	0.90	0.739	1.78	0.160
Injuries/Other Shocking Events	15.68	1.7	12.35	1.2	1.32	0.104	3.33	<b>0.000</b>
Traumas to Others	13.34	1.3	13.08	1.3	1.03	0.860	2.67	<b>0.000</b>
Other/Unnamed Traumas	17.03	3.1	23.56	2.9	0.67	0.142	1.19	0.614

  

	African American Males n = 888		Non-Hispanic White Males n = 1,402		African American Males vs. Non-Hispanic White Males		Non-Hispanic White Females vs. Non-Hispanic White Males	
	%	SE	%	SE	OR	<i>p</i>	OR	<i>p</i>
	Any Exposure	4.60	0.8	3.68	0.3	1.26	0.249	3.45
War-Related/Atrocities	6.56	1.8	4.84	1.2	1.38	0.416	1.96	<b>0.093</b>
Assaultive Violence	5.39	1.2	6.59	1.0	0.81	0.456	4.89	<b>0.000</b>
Sexual Violence	10.88	2.5	8.42	1.8	1.33	0.398	3.10	<b>0.000</b>
Childhood Maltreatment	11.31	2.7	10.32	1.9	1.09	0.556	2.15	<b>0.016</b>
Injuries/Other Shocking Events	5.29	0.8	3.75	0.4	1.44	<b>0.071</b>	3.62	<b>0.000</b>
Traumas to Others	5.45	1.1	4.63	0.6	1.20	0.465	3.11	<b>0.000</b>
Other/Unnamed Traumas	14.70	3.5	7.24	1.6	2.21	<b>0.033</b>	3.95	<b>0.000</b>

## References

- Alegria, M., et al. (2001-2003). National Institute of Mental Health Collaborative Psychiatric Epidemiology Surveys. Ann Arbor, MI, Inter-University Consortium for Political and Social Science Research.
- American Psychiatric Association (1994). Diagnostic and statistical manual of mental disorders. Washington, DC, American Psychiatric Association.
- Breslau, N. (2009) The Epidemiology of Trauma, PTSD, and Other Posttrauma Disorders. **10**, 198-210 DOI: 10.1177/1524838009334448
- Breslau, N., et al. (1999). "Vulnerability to assaultive violence: further specification of the sex difference in post-traumatic stress disorder." Psychol Med **29**(4): 813-821.
- Breslau, N., et al. (1991). "Traumatic events and posttraumatic stress disorder in an urban population of young adults." Archives of General Psychiatry **48**(3): 216-222.
- Breslau, N., et al. (1998). "Trauma and Posttraumatic Stress Disorder in the Community: The 1996 Detroit Area Survey of Trauma." Archives of General Psychiatry **55**: 626-632.
- Kessler, R. C., et al. (1995). "Posttraumatic Stress Disorder in the National Comorbidity Survey." Archives of General Psychiatry **52**(12): 1048-1060.
- Norris, F. H. (1992). "Epidemiology of trauma: Frequency and impact of different potentially traumatic events on different demographic groups." Journal of Consulting and Clinical Psychology **60**(3): 409-418.
- Roberts, A. L., et al. (2010). "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." Psychol Med **29**: 1-13.
- Tolin, D. F. and E. B. Foa (2008). "Sex differences in trauma and posttraumatic stress disorder: A quantitative review of 25 years of research." Psychological Trauma: Theory, Research, Practice, and Policy(1): 37-85.