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Trauma and Conditional Risk of Posttraumatic Stress Disorder in Two American Indian Reservation Communities

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Abstract

Purpose—To determine conditional risk of posttraumatic stress disorder (PTSD) in two culturally distinct American Indian reservation communities.

Method—Data from the American Indian Service Utilization, Psychiatric Epidemiology, Risk and Protective Factors Project, a cross-sectional population-based survey completed between 1997 and 2000. This study focused on 1,967 participants meeting the DSM-IV criteria for trauma exposure. Traumas were grouped into interpersonal, non-interpersonal, witnessed, and “trauma to close others” categories. Analyses examined distribution of worst traumas, conditional rates of PTSD following exposure, and distributions of PTSD cases deriving from these events. Bivariate and multivariate logistic regressions estimated associations of lifetime PTSD with trauma type.

Results—Overall, 15.9% of those exposed to DSM-IV trauma qualified for lifetime PTSD, a rate comparable to similar U.S. studies. Women were more likely to develop PTSD than were men. The majority (60%) of cases of PTSD among women derived from interpersonal trauma exposure (in particular, sexual and physical abuse); among men, cases were more evenly distributed across trauma categories.

Conclusions—Previous research has demonstrated higher rates of both trauma exposure and PTSD in American Indian samples compared to other Americans. This study shows that conditional rates of PTSD are similar to those reported elsewhere, suggesting that the elevated

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prevalence of this disorder in American Indian populations is largely due to higher rates of trauma exposure.

Keywords

Posttraumatic stress disorder; trauma; American Indians; epidemiology; conditional risk

INTRODUCTION

The conditional nature of posttraumatic stress disorder (PTSD) is unusual among the more common psychiatric disorders. By definition, PTSD can only be diagnosed in those exposed to a DSM-qualifying trauma [1].[§] Traumas include profoundly stressful experiences, such as suffering violence to self or witnessing it in loved ones. Population-based prevalence statistics, then, can be considered the product of two probabilities: first, exposure to a DSM-qualifying trauma and second, development of PTSD given such exposure (conditional risk). While population-based prevalence statistics are critical for understanding overall mental health, investigations of conditional risk and associated demographic correlates help target prevention and treatment efforts more precisely by focusing, for instance, on those traumas most likely to lead to PTSD. Here, we investigated conditional risk for PTSD in two well-defined American Indian samples.

Lifetime trauma exposure is common [2-5]. It is even more prevalent in American Indian populations, where such exposure rises to the level of a significant public health concern [6,7]. For example, American Indians are more likely to die as a result of accidental injuries, homicide, and motor vehicle accidents than those in the general population [8]. Their rates of criminally violent victimization are twice those of African Americans and 2.5 times those of Whites [9]. The results reported in the American Indian Service Utilization, Psychiatric Epidemiology, Risk and Protective Factors Project (AI-SUPERPFP), a unique population-based survey of two large American Indian reservation communities [10,11], corroborate these earlier findings. Participants more often experienced physical assaults and witnessed traumatic events, or reported that loved ones had experienced such events, than did their counterparts in the baseline National Comorbidity Survey (NCS) [3].

Disparities in PTSD among American Indians parallel similar differences in trauma exposure. While this disorder affects an estimated 7-8% of Americans during their lifetimes [4,12-14], the handful of studies of American Indian populations that allow comparisons to national data show higher rates. For instance, a study of Vietnam veterans using the Structured Clinical Interview for DSM-III-R (SCID) [15] found lifetime PTSD rates significantly higher for the two American Indian samples than for Whites. Data from the AI-SUPERPFP, which used methods comparable to those of the baseline NCS, likewise showed lifetime PTSD rates significantly higher for both men and women in tribal samples than among other Americans [16].

Published estimates of conditional risk for PTSD suggest that about 14% of those in the general population who experience trauma develop PTSD [17]. They also reveal that rates vary across types of exposure; for instance, Breslau and colleagues [17] reported conditional rates of PTSD ranging from 28.8% for interpersonal violence to 2.7% for trauma to someone close.

[§]DSM-IV defines a trauma as an event or events that (1) “involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others” AND “the person’s response involved intense fear, helplessness, or horror.” (p 427-428 [1]). The literature does not always conform to this full definition (e.g., in non-psychiatric literature or in studies predating DSM-IV). Here, “qualifying trauma” is used when the full DSM-IV definition was applied. As described later, this was the case for the AI-SUPERPFP trauma assessments described here.

We drew upon AI-SUPERPFP data to determine the distribution of four commonly used categories of qualifying traumatic events [2,6]: interpersonal, non-interpersonal, and witnessed traumas, and trauma to close others. We described conditional risk of PTSD by both trauma category and specific events. Finally, we examined the distribution of PTSD cases by trauma type and event. Embarking on this work, we expected conditional risk of PTSD to reflect patterns similar to those observed in the general population; in particular, we anticipated that risk would vary across trauma categories and events and by gender. Given earlier AI-SUPERPFP reports of similar distributions of traumas and overall prevalence of PTSD [6,11,16] by tribe, we did not foresee significant tribal variation.

METHODS

Sample

AI-SUPERPFP estimated the prevalence of psychiatric disorders and associated service use in two large culturally distinct, reservation populations. Populations of inference were 15- to 54-year-old enrolled members of two closely related Northern Plains (NP) tribes and a Southwest (SW) tribe. Under formal agreements to preserve confidentiality, we use general descriptors in place of specific tribal names [18].

The two tribal groups differ in language, creation stories, migratory histories, principles of reckoning descent, and historical forms of subsistence. They share similar histories of colonization including dramatic military resistance and externally imposed forms of governance. Although the tribes vary considerably in education, income, and integration into the larger society, unemployment and poverty are widespread in both.

All participants included in AI-SUPERPFP lived on or within 20 miles of their reservations at time of sampling (1997). Stratified random sampling procedures were used, with strata defined by tribe, gender, and age. Official enumerations of tribal members known as tribal rolls were used to define the target population. Records were selected randomly from these rolls for inclusion in replicates, which were then released as needed to allow approximately 1,500 completed interviews per tribe. In the SW and NP respectively, 46.6% and 39.2% of persons on tribal rolls lived on or near their reservations; of those located and found eligible, 76.8% in the NP (N=1,638) and 73.7% in the SW (N=1,446) participated. Sample weights accounted for differential selection probabilities across strata and for varying rates of non-response by strata. AI-SUPERPFP methods are described in greater detail elsewhere [10].

Data Collection Procedure

Before AI-SUPERPFP began, research approvals were obtained from all participating tribes and from the Colorado Multiple Institutional Review Board. After providing a complete description of the study, written informed consent was obtained from all adult participants; for minors, parental/guardian consent was acquired prior to adolescent assent. Participants were interviewed individually by tribal members who received intensive training on data collection methods; interviews were computer-assisted, with responses entered directly into laptops. Extensive quality control procedures verified that location, recruitment, and interview procedures were conducted in a standardized, reliable manner.

Measures

AI-SUPERPFP interview questions assessing trauma exposure and PTSD diagnostic status derived from multiple sources [3,19,20]. The PTSD module was a modified version of the Composite International Diagnostic Interview [21,22] based on DSM-IV [1] criteria. The instrument included 15 common traumas most often linked to a diagnostic assessment of PTSD in American Indian and other populations. Types of trauma were aggregated into four

common domains: *interpersonal* traumas, such as sexual or physical assaults and domestic, spousal or child abuse (7 items); *non-interpersonal* trauma, specifically disasters or accidents (2 items); *witnessed* trauma, such as observed assaults or accidents (3 items); and significant trauma *experienced by close friends or family* (3 items) [3,19,20]. A final question asked about *other* traumas. Assessment of the worst event was obtained as follows: “You told me you had been in several extremely stressful situations. I’ll repeat the situations you told me about. I’d like you to think about the 3 times that were the worst.” The analyses that follow focused on the trauma that each participant prioritized *first* in his or her list of worst experiences.

Full compliance with the DSM-IV definition of trauma was assessed by asking the following questions of each of the 3 worst events: 1a) At the time, did you believe that you or someone else could be killed or seriously harmed?; 1b) At the time, were you seriously harmed or was anyone else killed or seriously harmed?; 2a) When this happened, did you experience feelings of intense helplessness?; 2b) Did you experience intense fear?; and 2c) At the time, did you feel horrified? In order to be a qualifying trauma, a “yes” response was required for either 1a or 1b (actual or threatened death or injury) and 2a, 2b, or 2c (a personal response of helplessness, fear, or horror).

Analyses

Variable construction was completed using SAS [23] and SPSS [24]. All inferential analyses were conducted in Stata [25]. We estimated both exposure to DSM-IV qualifying traumas and lifetime conditional risk of PTSD among those reporting trauma, stratifying by gender within each tribe. Employing Stata’s “svy: tab” procedure, with Pearson χ^2 values corrected for survey design and converted to F values, we determined significant differences across groups. Post-hoc analyses of non-overlapping confidence intervals permitted for specific group contrasts; in light of multiple comparisons, we only discuss comparisons significant at $p < .01$. The percentages of PTSD cases due to specific qualifying trauma categories and events were calculated and contrasted across gender using parallel methods. Logistic regression methods were used to estimate bivariate and multivariate associations of lifetime PTSD with trauma type and demographic variables. Since witnessed trauma exhibited the weakest conditional risk of PTSD, it was selected as primary referent. We assessed interactions among gender, tribe, and worst trauma type; only the interaction between tribe and non-interpersonal events was significant. Adjusted odds ratios are reported separately for this interaction.

RESULTS

Sample Demographics

The sample was restricted to participants reporting at least one qualifying trauma. These 1,967 participants made up 64% of the total sample, ranging from 59% for SW males to 67% for NP females. Trauma-exposed participants were more likely than their non-exposed counterparts to be from the NP tribe, to report a post-secondary education, to work for pay, and to be married/living as married. Table 1 presents demographic characteristics for the trauma-exposed sample.

Trauma Prevalence

Table 2 summarizes the events identified as participants’ worst qualifying trauma. Although between-group differences are highlighted there, comparisons of confidence intervals within samples also allow inferences within four tribe-by-gender groups. Interpersonal traumas were more commonly reported among women than among men for both tribes. By contrast, SW men reported higher prevalence of non-interpersonal trauma than did their female

counterparts in the same tribe, while NP men were more likely to report non-interpersonal traumas than were both groups of women. Within-group comparisons show that, among both groups of men, witnessed traumas were more common than either interpersonal traumas or traumas to someone close. For women, interpersonal traumas were most common (compared to all other types of events for SW women, and compared to all but witnessed trauma among NP women).

Turning to specific events, gender differences continued to predominate. Among interpersonal events, combat exposure was identified as the worst event only among men, while women more often identified rape and spousal abuse. Among witnessed traumas, men were more likely than women to name seeing a serious accident or disaster as their worst event.

Conditional Rates of PTSD

Overall, 15.9% of those reporting a qualifying trauma received a lifetime PTSD diagnosis. Participants prioritizing an interpersonal event as their worst trauma had a conditional rate of PTSD of 27.8%—higher than those who suffered witnessed trauma (9.3%), non-interpersonal trauma (11.0%), or trauma to someone close (14.5%). Table 3 shows that, when considering all traumas, conditional rates of PTSD were lower for NP men than for either sample of women. In both tribes, women with an interpersonal “worst event” had higher conditional rates of PTSD than did those whose worst event was witnessed trauma. NP women with an interpersonal worst event also had higher rates than did those whose worst event was non-interpersonal. No within-sample differences emerged for men.

Correlates of Lifetime PTSD

We investigated relationships between PTSD and type of qualifying trauma, gender, tribe, education, age, employment, and marital status (Table 4). Turning first to unadjusted bivariate results, individuals experiencing either interpersonal traumas or trauma to close others were more likely to qualify for lifetime PTSD than were those who witnessed a traumatic experience. Also, women, SW participants, and participants aged 25 or older were more likely to exhibit PTSD in unadjusted analyses.

Interpersonal traumas, traumas to someone close, female gender, and older age persisted as significant correlates when odds ratios were adjusted for other correlates. Controlling for other variables, those who were employed at time of interview were less likely to qualify for lifetime PTSD. Of special interest, an interaction (interpersonal trauma by tribe) showed that the odds of lifetime PTSD related to exposure to interpersonal trauma were significantly greater in the SW than in the NP.

Distribution of PTSD Cases by Trauma

Table 5 presents distribution of PTSD cases by trauma type and event, both overall and by gender. In general, more than half of PTSD cases were associated with interpersonal trauma; rates related to witnessed trauma, trauma to someone close, and non-interpersonal trauma were significantly lower and comparable to one another. Among women, 60.5% of the PTSD cases were due to interpersonal trauma; however, this was true for only 33.7% of men.

DISCUSSION

These results provide a critical link between two previous AI-SUPERPPF reports, each of which compared this study's findings to the NCS baseline study. Manson and colleagues [6] showed that trauma exposure for these tribal samples was relatively high when compared

others in the U.S., especially for women; Beals et al. [16] demonstrated that rates of lifetime PTSD surpassed those reported in NCS. Given that PTSD is the product of the probability of exposure and, given exposure, the conditional risk for PTSD, the current study supplies essential insights that help to explain elevated rates of PTSD in the AI-SUPERPFP samples.

Trauma Exposure

An earlier report compared AI-SUPERPFP trauma rates to those of the baseline NCS [6]. Since NCS predated DSM-IV, that analysis did not focus solely on qualifying traumas but rather general trauma exposure. Almost two-thirds of the AI-SUPERPFP sample reported lifetime trauma exposure, with these rates falling in the upper range reported for U.S. men and being higher than for U.S. women [6]. With respect to specific traumas, AI-SUPERPFP participants exhibited higher rates of exposure for witnessed trauma, trauma to someone close, and interpersonal trauma; among American Indian women, rates of sexual assault also were higher than those of their NCS counterparts. Both AI-SUPERPFP and NCS results contrast with those of Breslau and colleagues, who reported trauma exposure rates of 90% in the Detroit Area Study of Trauma (DAST) [2]. The difference in observed rates is likely entirely due to Breslau's inclusion of the sudden unexpected death of a close other in the list of potential traumas, as is allowed under DSM-IV [1]. Over 60% of their sample endorsed this trauma alone [2]. Had AI-SUPERPFP included this event among traumas, no doubt both the trauma and PTSD prevalence rates would have been higher.

In contrast to the above, here we focus on DSM-IV qualifying traumas, that is, those that involved real or threatened injury or death as well as intense personal reactions. When AI-SUPERPFP participants were asked to identify their worst qualifying trauma, witnessed (31.6%) and interpersonal (30.1%) traumas were named most often, followed by non-interpersonal traumas (20.8%) and traumas to someone close (16.1%). Gender differences were common. Among event categories, interpersonal trauma was the most frequent type of trauma reported by women; witnessed trauma was named most frequently by men. In regard to specific events, accidents (either experienced or witnessed) were most commonly identified as the worst event by men; spousal abuse, witnessed familial violence, and rape/molestation were most frequently listed by women.

Although comparable data about worst event have not been published using the baseline NCS, the DAST findings provide important context. In particular, interpersonal and witnessed traumas appear to be more commonly identified as worst among AI-SUPERPFP participants than in that population-based study of Detroit residents [17]. Although the degree to which methodological differences between these studies influence such comparisons is undeterminable, AI-SUPERPFP patterns are consistent with official statistics suggesting that trauma exposure is a significant public health concern among American Indians, especially exposure to violence [6,7,9,8].

Conditional Risk for Lifetime PTSD

Overall, conditional risk of PTSD, given exposure to a trauma, was 15.9%, ranging between 8.7% for NP males and 22.2% for SW females. Comparable figures from DAST were 13.8% overall, 9.2% for men, and 16.5% for women [17]. Baseline NCS rates were 8.1% for men and 20.4% for women [3]. Generally, then, conditional rates of PTSD among these three studies were similar, both overall and by gender.

Indeed, gender is critical to understanding PTSD prevalence. Breslau and colleagues [26,27] have written extensively about the gender differentials in PTSD prevalence found in DAST and other studies. Typically, men have reported *higher* levels of trauma than women, accompanied by *lower* rates of PTSD. In contrast, in AI-SUPERPFP, men and women

reported comparable levels of trauma exposure [6]. Furthermore, although a gender differential existed in conditional rates of PTSD, the odds ratios for gender were considerably smaller among AI-SUPERPFP participants than in either NCS and DAST [2,3]. When we parse the findings by event category, an interesting difference emerges between DAST and AI-SUPERPFP. In both instances, conditional rates of PTSD associated with interpersonal trauma were typically twice those of other trauma types [2]. However, whereas DAST reported a strong gender differential in conditional PTSD for interpersonal trauma [26], this gender difference was not statistically significant in the American Indian samples as seen in Table 3, nor were the interactions between gender and event type significant when examined in preparation for Table 4. This finding may be interpretable in view of documented, high average levels of violence in many American Indian communities [9]. This reality arguably puts American Indians of both genders at greater risk for exposure to trauma and thus, PTSD than other Americans [16].

We did not anticipate, and rarely found, significant differences in conditional PTSD by tribe. Although such patterns have appeared for other diagnoses represented in AI-SUPERPFP data [11,16,28-30], their absence here may reflect the ubiquity of trauma exposure in the participating communities. Our ethnographic work has also suggested that PTSD diagnosis has considerable cultural validity across both tribes [31-33]. We did observe a significant relationship between trauma type and tribe for one category of event: SW participants experiencing non-interpersonal trauma confronted greater risk of PTSD than did their NP counterparts. Non-interpersonal events tended to be less frequent in the SW than in the NP (see Table 2). Whether the relative uniqueness of non-interpersonal events was important or whether the non-interpersonal events differed in severity across tribes merits future consideration.

Limitations

This study shares the limitations of all cross-sectional efforts. First, observed associations do not imply causal relationships. Second, sampling issues bear upon interpretation of findings. Our project collected data from only two American Indian reservation populations, and the extent to which these findings can be generalized beyond these communities is unknown. Likewise, our analyses included only participants reporting at least one significant trauma. Analyzing only exposed individuals maximized the clinical relevance and appropriateness of our conclusions about conditional risk, together with our ability to compare groups by exposure type. However, populations of inference were thereby further limited. In addition, our reliance upon self-report may have allowed participants to underreport stigmatizing traumas or symptoms. Finally, these findings represent the mental health status of two reservation communities between 1997 and 2000. We have compensated for the age of the dataset by restricting comparisons to the baseline NCS and DAST studies, both conducted close in time to AI-SUPERPFP. More importantly, AI-SUPERPFP's status as a large, landmark study—and one that is unlikely to be soon replicated—continues to recommend it as an important data source on PTSD among American Indians.

CONCLUSIONS

This study examined the life experiences of two American Indian reservation populations. The overall risk of PTSD, given trauma exposure, was comparable to that of other U.S. populations studied using similar methods. We conclude that greater prevalence of PTSD reported for these samples [16] compared to other Americans is largely due to higher rates of trauma exposure [6], not to differential rates of conditional PTSD across populations. The most remarkable difference, compared to other studies, is the relative muting of gender differences in conditional risk in these tribal samples. In contrast to the commonly observed pattern of higher rates of trauma exposure among males nationally, men and women in our

sample were equally likely to report trauma exposure. Similarly, although data from both the NCS and the DAST found traumatized women more often developed PTSD than did traumatized men, our findings showed a less marked gender differential. This was especially true for interpersonal traumas.

Epidemiological studies of PTSD supplement clinical understandings of the disorder in important ways [5]. In this case, our findings highlight the importance of preventing trauma exposure in American Indian communities--these high rates of trauma that are likely responsible for the relative pervasiveness of PTSD. Further once exposure occurs, given the varying conditional rates of PTSD, careful targeting of scarce screening and intervention resources is possible. Among women, those experiencing interpersonal traumas deserve special attention but, more generally, these results offer clear justification for extending programs to *both* women and men. Rather than assuming that all, or even most, experiencing a qualifying trauma will develop PTSD, the use of screening, brief intervention, and referral techniques in common settings such as primary care show considerable promise[34-36]. It is to such efforts that we plan to turn our attention to in coming years.

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Table 1
Demographic Characteristics of the AI-SUPERPPF Samples Exposed to Trauma, by Tribe and Gender.

	SOUTHWEST						NORTHERN PLAINS					
	Males (SM)		Females (SF)		Males (NM)		Females (NF)		Males (NM)		Females (NF)	
	%	99% CI ^c	Tribe by gender ^d	%	99% CI ^c	Tribe by gender ^d	%	99% CI ^c	Tribe by gender ^d	%	99% CI ^c	Tribe by gender ^d
n	362		513	521	571		29,0		67,3			
% trauma exposed sample ^a	18.4		26.1	26.5	29.0							
% population sample ^b	58.7		61.9	65.9	67.3							
Age												
15-24	26.8	22.7-31.2		21.6	18.4-25.2		20.0	17.0-23.3		23.6	20.7-26.8	
25-34	27.9	23.3-33.1		27.9	24.0-32.2		27.7	23.7-32.2		29.3	25.5-33.4	
35-44	24.6	20.0-30.0		31.5	27.4-36.0		32.7	28.5-37.3		27.8	24.0-31.8	
45+ ^e	20.7	17.1-24.8		19.0	16.0-22.4		19.6	16.7-22.9		19.3	16.6-22.2	
Education												
Less than 12 years	22.4	17.2-28.5		21.5	17.1-26.7		20.8	16.5-25.8		24.9	20.4-30.0	
HS Grad or GED	48.5	41.7-55.4		40.0	34.4-45.9	NM	52.7	46.7-58.6	SF,NF	39.0	33.6-44.6	
Post-secondary	29.1	23.3-35.7		38.5	33.0-44.3	NM	26.5	21.5-32.1	SF	36.1	30.8-41.8	
Employment												
Student	10.6	7.1-15.5		10.9	7.9-14.8		8.2	5.7-11.7		13.5	10.3-17.4	
Working for pay	64.8	58.0-71.0		61.9	56.2-67.2		63.4	57.5-68.9		53.6	47.9-59.1	
Not working for pay ^f	24.7	19.2-31.0		27.3	22.4-32.7		28.4	23.3-34.1		33.0	27.8-38.6	
Marital Status												
Married	42.5	36.1-49.1	NF	43.4	37.8-49.1	NM,NF	30.4	25.2-36.2	SF	28.7	23.9-34.2	
Separated, divorced, widowed	8.5	5.5-13.0	NF	12.2	9.0-16.4		14.7	10.9-19.4		19.4	15.4-24.2	
Never married	32.0	26.1-38.5		24.1	19.6-29.1		29.4	24.4-34.9		26.3	21.9-31.2	
Cohabiting or living as married	17.0	12.4-22.8		20.3	16.0-25.5		25.6	20.7-31.2		25.6	20.9-30.9	

^aPercentage of the 1,967 AI-SUPERPPF participants reporting exposure to a DSM-IV qualifying trauma.

^bPercentage of the full tribe by gender samples (SM=617, SF=829, NM=790, NF=848)

^cConfidence interval (CI)

^dPairwise comparisons between groups significantly different at p .01 denoted with superscripts: SM Southwest males SF Southwest females NM Northern Plains males NF Northern Plains females

^eWhile at time of sample selection (1997) the maximum age was 54, some persons were older at time of interview (1997-1999).

^fIncludes homemaker, looking for work, unemployed, retired, permanently disabled, other

Table 2
Worst Qualifying Trauma Experienced in AI-SUPERPPF Trauma Exposed Sample, By Tribe and Gender.

	NORTHERN PLAINS											
	SOUTHWEST											
	Males (SM)		Females (SF)		Males (NM)		Females (NF)		Males (NM)		Females (NF)	
n	362	513	521	571								
	% ^a	99% CI ^b	Tribe by gender ^c	%	99% CI ^b	Tribe by gender ^c	%	99% CI ^b	Tribe by gender ^c	%	99% CI ^b	Tribe by gender ^c
DSM-IV Qualifying Trauma												
Interpersonal trauma	21.2	16.1-27.3	SF,NF	42.5	36.9-48.4	SM,NM	18.8	14.6-23.8	SF,NF	35.4	30.1-41.0	SM,NM
Served in direct combat	3.1	1.5-6.3	SF,NF	0.0	0.0-1.3	SM,NM	3.8	2.2-6.5	SF,NF	0.1	0.0-1.4	SM,NM
Raped	1.3	0.4-4.1	SF,NF	11.2	8.0-15.5	SM,NM	1.3	0.5-3.5	SF,NF	11.0	8.0-15.1	SM,NM
Molested	1.2	0.3-4.3		3.9	2.1-7.1	NM	0.5	0.1-2.1	SF	2.6	1.3-5.3	
Physically abused/hurt by parent/caregiver	3.3	1.5-6.8		2.7	1.3-5.5		3.7	2.1-6.6		3.1	1.7-5.7	
Physically abused/hurt by spouse or partner	1.9	0.7-4.9	SF,NF	20.5	16.2-25.6	SM,NM	3.7	1.9-6.9	SF,NF	15.0	11.3-19.8	SM,NM
Physically abused/hurt by someone else	2.3	0.9-5.7		3.6	1.9-6.5		1.7	0.7-4.3		1.7	0.8-3.8	
Robbed, mugged, physically attacked	8.2	5.0-12.9	SF,NF	0.7	0.1-2.9	SM	4.1	2.3-7.3		1.8	0.7-4.5	SM
Non-interpersonal trauma	23.9	18.6-30.2	SF	13.2	9.7-17.6	SM,NM	29.2	24.0-35.0	SF,NF	17.8	13.8-22.7	NM
Natural disaster	6.2	3.6-10.5		3.7	2.0-6.5	NM	11.1	7.8-15.7	SF	5.6	3.5-8.9	
Life-threatening accident	17.7	13.1-23.5		9.5	6.6-13.6	NM	18.1	13.9-23.2	SF	12.2	8.8-16.6	
Witness trauma	36.5	30.1-43.4		29.7	24.7-35.3		34.0	28.6-40.0		28.0	23.2-33.3	
Witnessed violence between family members	13.4	9.3-18.9		19.3	15.1-24.3	NM	10.3	7.2-14.5	SF	16.2	12.5-20.8	
Witnessed others raped, injured, or killed	2.9	1.3-6.4		1.3	0.5-3.7		3.3	1.6-6.6		2.2	1.0-4.9	
Witnessed serious accident or disaster	20.2	15.3-26.3	SF,NF	9.1	6.3-13.0	SM,NM	20.4	15.9-25.7	SF,NF	9.5	6.7-13.4	SM,NM
Trauma to someone close	16.8	12.2-22.6		13.5	10.0-18.0		16.8	12.8-21.6		17.4	13.6-22.0	
Someone close in life-threatening situation	5.6	3.1-9.6		3.7	2.0-6.7		5.5	3.4-8.8		4.0	2.3-6.7	
Someone close raped/sexually abused	2.2	0.9-5.5		3.5	1.9-6.4		2.3	1.1-4.6		5.7	3.6-8.9	

	SOUTHWEST				NORTHERN PLAINS					
	Males (SM)	Females (SF)	Males (NM)	Females (NF)	Males (SM)	Females (SF)	Males (NM)	Females (NF)		
n	362	513	521	571						
DSM-IV Qualifying Trauma	%^a	99% CI^b	Tribe by gender^c	%	99% CI^b	Tribe by gender^c	%	99% CI^b	Tribe by gender^c	
Family member or someone close committed suicide	9.0	5.7-13.8		6.3	4.0-9.7		9.0	6.1-13.0	7.7	5.2-11.3
Other traumatic experiences	1.6	0.6-4.3		1.1	0.4-3.2		1.2	0.4-3.8	1.4	0.5-4.0

^a Percentages derived as follows: (Number of participants choosing specific trauma as their worst/Number of participants indicating lifetime experience of any qualifying trauma)

^b Confidence interval

^c Pairwise comparisons between tribe-gender groups significantly different at p < .01 are denoted with superscripts: SM Southwest males SF Southwest females NM Northern Plains males NF Northern Plains females

Table 3

Prevalence of DSM-IV Lifetime PTSD within Each Category of Trauma Exposure, by Tribe and Gender.

DSM-IV Qualifying Trauma	SOUTHWEST						NORTHERN PLAINS					
	Males			Females			Males			Females		
	N*	%	99% CI ^a	Tribe by gender ^b	N	%	99% CI ^a	Tribe by gender ^b	N	%	99% CI ^a	Tribe by gender ^b
<i>Interpersonal trauma</i>	76	21.0	11.2-35.8		211	33.1	25.1-42.2		101	16.1	8.4-28.5	
<i>Non-interpersonal trauma</i>	87	16.5	8.4-29.9		68	18.7	9.0-34.8		148	4.8	1.7-12.8	
<i>Witness trauma</i>	130	7.5	3.2-16.6		151	9.6	4.8-18.3		172	6.9	3.3-13.8	
<i>Trauma to someone close</i>	61	13.2	5.3-29.3		72	20.7	11.0-35.4		93	11.5	5.3-23.0	
<i>Any trauma^c</i>	361	13.3	9.2-18.8		508	22.2	17.7-27.5	NM	519	8.7	5.9-12.5	SF,NF

* Unweighted sample size of participants reporting this type of qualifying trauma as their worst whose PTSD status is known

^a Confidence interval

^b Pairwise comparisons between groups significantly different at p < .01 denoted with superscripts: SM Southwest males SF Southwest females NM Northern Plains males NF Northern Plains females

^c Includes Other Trauma category

Table 4

Correlates of DSM-IV Lifetime PTSD among AI-SUPERPPF Participants Exposed to a Qualifying Trauma.

	Unadjusted		Adjusted	
	OR ^a	95% CI ^b	OR ^a	95% CI ^b
Qualifying Trauma Type				
Witnessed	1.00		1.00	
Interpersonal	3.75 ***	2.68-5.25	3.34 ***	2.37-4.71
Non-Interpersonal ^c	1.21	<i>0.79-1.85</i>		
Southwest	--	--	1.94 *	<i>1.13-3.31</i>
Northern Plains	--	--	0.81	<i>0.44-1.49</i>
Trauma to Close Other	1.66 *	1.09-2.52	1.68 *	1.09-2.57
Gender				
Male	1.00		1.00	
Female	2.16 ***	1.66-2.83	1.68 ***	1.26-2.23
Tribe				
Northern Plains	1.00		1.00	
Southwest ^c	1.40 **	1.09-1.80		
Non-Interpersonal trauma	--	--	2.81 **	<i>1.44-5.47</i>
Trauma other than Non-Interpersonal	--	--	1.18	<i>0.88-1.57</i>
Education				
11th grade	1.00		1.00	
12th grade	0.91	<i>0.65-1.26</i>	0.89	<i>0.62-1.28</i>
Post HS	1.30	<i>0.93-1.82</i>	1.15	<i>0.79-1.67</i>
Age				
15-24	1.00		1.00	
25-34	1.90 ***	1.28-2.80	1.92 **	1.26-2.92
35-44	1.91 ***	1.30-2.81	1.91 **	1.24-2.95
45+ ^d	2.41 ***	1.65-3.52	2.49 ***	1.63-3.82
Employment				
Not working for pay	1.00		1.00	
Employed	0.84	<i>0.65-1.08</i>	0.69 **	0.52-0.91
Marital Status				
Not Married	1.00		1.00	
Married or cohabiting	1.14	<i>0.89-1.47</i>	1.04	<i>0.79-1.37</i>

^aOdds Ratio^bConfidence Interval

^cThe 3-way interaction between trauma type, tribe, and gender was not significant at $p < .05$. The only significant 2-way interaction between trauma type, tribe, and gender was between experience of non-interpersonal trauma and tribe. We consequently report how the effect of exposure to non-interpersonal trauma varies by tribe, and how the effect of tribal membership varies according to whether the experienced trauma was non-interpersonal or another type.

^dWhile at time of sample selection (1997) the maximum age was 54, some persons were older at time of interview (1997-1999).

*
p .05

**
p .01

p .001

Table 5
Distribution of AI-SUPERFPF Lifetime PTSD Cases Due to Specific Qualifying Traumas, Overall and by Gender.

	Total			Males			Females			Gender Difference ^a
	n	%	99% CI ^c	n	%	99% CI ^c	n	%	99% CI ^c	
n with lifetime PTSD	318			96			222			
DSM-IV Qualifying Trauma										
Interpersonal Trauma	164	52.4	45.0-59.8	33	33.7	22.2-47.7	131	60.5	51.6-68.8	F = 17.9050 p < .0001
Served in direct combat	10	2.3	1.0-5.2	10	7.8	3.4-16.7	0	0.0	0.0-2.9 ^d	F = 22.4663 p < .0001
Raped	48	14.7	10.2-20.7	1	1.3	0.1-14.9	47	20.5	14.2-28.6	F = 16.0103 p = .0001
Molested	18	6.1	3.3-11.1	2	2.2	0.3-12.7	16	7.8	4.1-14.6	
Physically abused/hurt by parent/caregiver	14	4.8	2.4-9.6	8	9.4	3.7-22.2	6	2.8	0.9-8.1	F = 5.5920 p = .0181
Physically abused/hurt by spouse or partner	59	19.7	14.3-26.4	3	3.3	0.7-14.6	56	26.7	19.5-35.5	F = 19.4989 p < .0001
Physically abused/hurt by someone else	4	0.9	0.2-3.2	2	1.4	0.2-8.4	2	0.7	0.1-4.0	
Robbed, mugged, physically attacked	11	3.9	1.8-8.4	7	8.3	3.2-20.2	4	2.0	0.5-7.3	F = 6.0993 p = .0136
Noninterpersonal trauma	44	14.4	9.8-20.5	21	23.3	13.6-37.0	23	10.5	6.1-17.4	F = 8.1061 p = .0044
Natural disaster	8	2.6	1.0-6.4	7	7.3	2.6-18.5	1	0.5	0.0-6.5	F = 10.6992 p = .0011
Life-threatening accident	36	11.8	7.7-17.6	14	16.0	8.2-29.1	22	10.0	5.8-16.8	ns ^e
Witness to trauma	58	18.4	13.3-25.0	22	23.7	14.0-37.3	36	16.2	10.7-23.8	ns
Witnessed violence between family members	28	9.1	5.6-14.4	10	10.6	4.7-22.2	18	8.5	4.7-15.0	ns
Witnessed others raped, injured, or killed	8	2.8	1.1-7.1	3	3.4	0.7-15.0	5	2.5	0.8-8.1	ns
Witnessed serious accident or disaster	22	6.5	3.7-11.2	9	9.7	4.0-21.5	13	5.2	2.5-10.5	ns
Trauma to someone close	52	14.8	10.3-20.6	20	19.3	10.8-31.9	32	12.8	8.0-19.6	ns
Someone close in life-threatening situation	13	3.8	1.8-7.8	5	5.1	1.5-15.8	8	3.2	1.2-8.0	ns
Someone close raped/sexually abused	16	4.9	2.5-9.3	3	2.7	0.6-11.3	13	5.9	2.8-11.8	ns
Family member or someone close committed suicide	23	6.1	3.5-10.3	12	11.5	5.4-22.9	11	3.7	1.7-8.0	F = 8.0474 p = .0046
Other traumatic experiences	0	0.0	0.0-2.0^d	0	0.0	0.0-6.4^d	0	0.0	0.0-2.9^d	ns

^aTest results of gender difference. Only differences significant at p .05 are reported. Design-based F with df = 1, 2792 and p value reported.

^bunweighted N reporting trauma as worst

^c99% confidence intervals

^d99% one-sided confidence interval

^eNon-significant at $p < .05$