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Persistent Serious Mental Illness among Former Applicants for VA PTSD Disability Benefits and Long-Term Outcomes: Symptoms, Functioning, and Employment

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Abstract

Millions of US veterans have returned from military service with posttraumatic stress disorder (PTSD), for which a substantial number receive Department of Veterans Affairs (VA) disability benefits. Although PTSD is treatable, comorbid serious mental illness could complicate these veterans' recovery. Using VA administrative data, we examined the burden of persistent serious mental illness in a nationally representative cohort of 1,067 men and 1,513 women who applied for VA PTSD disability benefits between 1994 and 1998 and served during or after the Vietnam conflict. Self-reported outcomes were restricted to the 713 men and 1,015 women who returned surveys at each of 3 collection points. More than 10% of men and 20% of women had persistent serious mental illness; of these, more than 80% also had persistent PTSD. On repeated measures modeling, those with persistent serious mental illness consistently reported more severe PTSD symptoms and poorer functioning in comparison to other participants (ps < .001); their employment rate did not exceed 21.0%. Interactions between persistent serious mental illness and PTSD were significant only for employment (p = .002). Persistent serious mental illness in this

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population was almost 2 to 19 times higher than in the general US population. Implications are discussed.

Along with traumatic brain injury, posttraumatic stress disorder (PTSD) has become the "signature" war injury of the United States' recent military actions around the world (Brundage et al., 2015; Taniellian and Jaycox, 2008). However, long before the current period, millions of military veterans returned from prior wars, conflicts, and even peacetime service with PTSD symptoms. Consequently, nearly 650,000 US veterans currently receive Department of Veterans Affairs (VA) disability benefits for PTSD; of these, approximately 40% are Vietnam era veterans; 30% are Gulf War I era veterans; and 24% are veterans of more recent conflicts (Dept. Veterans Affairs, Veterans Benefits Administration, 2014).

In U S. general populations, approximately one half to four-fifths of PTSD cases remit after 6 years, even without treatment (Breslau et al., 1998; Kessler et al., 1995). Unfortunately, few additional remissions are observed after 6 years have passed (Breslau, et al. 1998; Kessler, et al., 1995). Historically, applicants for VA PTSD disability benefits have waited at least 10 years after their military separation to file claims (Murdoch et al., 2003c). This suggests that VA disability applicants may have experienced longer, more intractable disease courses than Veterans with PTSD who never applied for such benefits. In the Social Security Disability Insurance and Supplemental Security Income (SSDI/SSI) programs, for example, disability applicants with mental disorders tend to be substantially more symptomatic than individuals with similar mental disorders who never apply. SSDI/SSI applicants with mental disorders are also more likely than non-applicants to have thought disorders, such as schizophrenia (Estroff et al., 1997; Kouzis and Eaton, 2000).

The idea that serious mental illness, defined here as schizophrenia, schizoaffective disorder, and bipolar spectrum disorders, might be complicating the recovery course of Veterans applying for PTSD disability benefits has not, to our knowledge, been explored. However, individuals with serious mental illnesses are at increased risk for developing PTSD (Buckley et al., 2009; Mauritz et al., 2013; Otto et al., 2004; Sareen et al., 2005). For example, delusional symptoms have been found to be more common in those with PTSD (Alsawy et al., 2015; Scott et al., 2007), and, in at least one small cohort of individuals with a first episode of psychosis, 69% had antecedent PTSD (Strakowski, et al., 1995). In 2009, nearly one fifth of men and one quarter of women with PTSD in the VA system received atypical antipsychotics (Bernardy et al., 2012). Whereas these medications might have been prescribed as adjunctive treatments for PTSD symptoms, it is also possible they were being used to treat coexisting psychoses. Serious mental illness coexisting with PTSD hampers the management of both conditions (Frueh et al., 2009; Mauritz, et al., 2013; Otto, et al., 2004; Salyers, et al., 2004). Proposals designed to reduce veterans' enrollment into or tenure on the VA disability rolls (e.g., "Treatment First" requirements, Satel, 2011) might work well for PTSD sufferers without co-existing serious mental illness but prove unrealistic or even harmful for those with serious mental illness. Understanding the burden of serious mental illness within the population of veterans seeking or receiving PTSD disability benefits therefore is necessary for creating compassionate, informed policies that account for these

veterans' potential complexities. This is particularly important given that the pool of individuals affected by these policies is large.

As part of a 15-year cohort study, we recently completed 64 qualitative interviews with former applicants for PTSD disability benefits. Almost a quarter of these interviewees described manic symptoms, paranoia, or hearing voices or offered other clues suggesting they had coexisting serious mental illness. This unexpected finding caused us to revisit diagnostic codes that had been collected for the entire cohort between 1994 and 2006. In the present paper, we describe the proportion of cohort members with persistent serious mental illness based on those codes. Because symptom reduction, improved functioning, and gainful employment would, we hypothesized, be critical to successfully transitioning any veteran off the disability rolls (Hennessey & Muller, 1994; Hogg-Johnson & Cole, 2003; Muller, 1992), we examined PTSD symptom severity; work, role, and social functioning; and gainful employment over time according to participants' serious mental illness status. Lastly, we explored the interaction of serious mental illness and PTSD on these outcomes.

Methods

Participants

Between January 1994 and December 1998 100,750 male veterans and 3,866 female veterans applied for, but did not necessarily receive, VA PTSD disability benefits. From this frame we randomly selected 2,466 men and 2,452 women (total $N = 4,918$) to participate in a Time 1 (1998-2000) survey that examined race, gender, and regional disparities in PTSD disability awards.(Murdoch et al., 2003a,b; Murdoch et al., 2005) Almost 68% of veterans responded ($n = 3,337$; 1,654 men and 1,683 women). These respondents comprised the cohort for the present study. At Time 2 (2004-2006) all 2,925 surviving and trackable Time 1 respondents were invited to participate in a second survey that examined long-term outcomes associated with receiving PTSD disability benefits (Murdoch et al., 2011). There were 87.2% of Veterans who responded ($n = 2,551$; 1,203 men and 1,348 women). The Time 3 survey (2011-2012) was intended to explore factors associated with recovery or non-recovery from PTSD. To improve the study's relevancy to most PTSD disability recipients and to avoid conflating the effects of advanced aging on mental health recovery, we limited the Time 3 survey to cohort members who served during or after the Vietnam conflict. As of January 1, 2011, 2,580 cohort members (1,067 men and 1,513 women) were still living and had served during or after the Vietnam conflict. These individuals contributed to the present study's primary outcome and to the secondary outcome of PTSD comorbidity.

Remaining secondary outcomes were limited to Time 3 survey respondents. Veterans eligible to receive the Time 3 survey had served during or after the Vietnam conflict, responded to the Time 2 survey, were still living, had a valid address, and were not incarcerated. Thus, from the Time 2 respondents we excluded 469 cohort members—mostly men—and 24 veterans who requested no further contact after Time 2. Of the 871 men eligible for the Time 3 survey, 713 (81.9%) responded and of the 1,229 women who were eligible, 1,015 (82.6%) responded.

Differences between Time 1 respondents and non-respondents were negligible (Murdoch, et al., 2003a). Compared to their Time 2 non-respondent counterparts, Time 2 male respondents who served during or after the Vietnam conflict were more likely to have had some college experience (44.0% vs. 52.3%, $p > = .003$) and to have worked for pay at Time 1 (21.1% vs. 26.6%, $p = .044$); Time 2 female respondents were more likely to be receiving VA disability benefits (76.6% vs. 82.9%, $p < 001$). Among Time 3 eligible men, respondents were approximately 30% less likely than non-respondents to have ever been diagnosed with schizophrenia ($p = .045$). Among Time 3 eligible women, there were no meaningful differences between respondents and non-respondents on any parameter.

Procedure

The study is a mixed-methods, ambispective cohort study (ambispective = retrospective and prospective elements). VA diagnostic codes were collected on the cohort between 1994 and 2006. The Minneapolis VA Health Care System's Internal Review Board for Human Studies reviewed and approved the study's protocol. We mailed surveys to veterans' homes with a money incentive ranging from $5 (Time 1) to $10 (Time 2 and 3). Cover letters described the surveys' risks and benefits and emphasized that participation was voluntary. Veterans signified consent by returning a completed survey.

Measures

Persistent serious mental illness.—We used the VA National Patient Care Database to determine whether cohort members had been diagnosed with an anxiety disorder, bipolar disorder, depressive disorder, PTSD, or schizophrenia between 1994 and 2006. Schizo-affective disorder was included with schizophrenia. Bipolar disorder and schizophrenia/schizo-affective diagnoses are strikingly stable over time (Bromet et al., 2011; Fusar-Poli et al., 2016; Marneros, Deister, & Rohde, 1991; Mason et al., 1996). Once reconfirmed by chart 6-24 months later, neither diagnosis is likely to ever be lost subsequently (Harvey et al., 2012; Kessing, 2005). In those few cases in which a bipolar or schizophrenia/schizo-affective disorder diagnosis is dropped, it is typically because the individual has acquired the other diagnosis. Thus, the stability of either a bipolar or schizophrenia diagnosis over 10 years is estimated to be 93% (Bromet et al., 2011).

In the present study, our goal was to be particularly conservative in classifying individuals as having persistent serious mental illness. Thus, even though data suggest 2 diagnoses should be adequate, we categorized veterans as having "persistent serious mental illness" only if they were diagnosed with bipolar disorder or schizophrenia/schizo-affective disorder at least once in 3 separate calendar years.

Secondary outcomes.—A high burden of persistent serious mental illness in this patient population could reflect high comorbidity with PTSD or it could reflect substitution effects. For example, veterans with persistent serious mental illness but no PTSD might preferentially apply for PTSD disability benefits for a reason other than their primary diagnosis if they perceived PTSD benefits as being easier to obtain. We therefore examined the percentage of cohort members with persistent serious mental illness only, with both persistent serious mental illness and persistent PTSD, with persistent PTSD only, and

neither. Veterans were classified as having persistent PTSD if they had a VA chart diagnosis of PTSD at least once in 3 separate calendar years.

PTSD symptoms; work, role, and social functioning; and gainful employment were assessed by survey at all three time points. The *Penn Inventory for PTSD* (Penn Inventory, Hammarberg, 1992) assessed veterans' PTSD symptom severity in the 2 weeks prior to each survey. Among veterans, scores ≥ 35 have .90 to .98 sensitivity and .94 to 1.00 specificity for PTSD diagnosis (Hammarberg, 1992). Cronbach's $\alpha = .94$ in this sample. The overall summary score of the self- reported *Social Adjustment Scale* (SAS-SR, Weissman et al., 1981) assessed veterans' work, role, and social functioning in the 2 weeks before each survey. The SAS-SR measures functioning in 7 domains: major "work" role (i.e., paid employment, homemaker, student); social and community activities; marriage, extended family, family unit, and parental relationships; and economic self-sufficiency. Higher scores indicate poorer adjustment across all domains. Normal, community-dwelling adults have average SAS-SR scores of 1.6, whereas scores for individuals with psychiatric illness usually exceed 2.0 (Weissman et al., 2001). Cronbach's $\alpha = .84$ in this sample. We considered veterans' scores to be impaired if their Penn Inventory exceeded 34 or their SAS-SR exceeded 2.0. For Time 3 respondents under age 65, a single SAS-SR item, "Did you work any hours for pay in the last 2 weeks?," measured gainful employment.

Data Analysis

We used Pearson's χ^2 and ANOVA to test unadjusted differences in outcomes within each gender. To investigate whether any associations between persistent serious mental illness and secondary outcomes varied by time, we used marginal (population-averaged) repeated measures modeling (SAS PROC MIXED or SAS PROC GLIMMIX) with a Toeplitz working correlation. This produced the smallest Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) for continuous outcomes and the χ^2/df closest to 1 for gainful employment (Stroup, 2016). The repeated measures models also tested for interactions between persistent serious mental illness and persistent PTSD. Model predictors included gender, to account for our stratified sampling strategy; persistent serious mental illness and persistent PTSD case status; time as a categorical variable; and the interactions between these variables. We had complete ascertainment for all predictors. A conventional two-tailed $p \leq .050$ denoted statistical significance. Computations used SPSS 19.0 or SAS 9.2.

Results

Descriptive Statistics

Table 1 describes the cohort's and Time 3 respondents' sociodemographic characteristics by gender. As can be seen, there were minimal differences between respondents and the overall cohort. Men were on average 11 years older than the women. Almost 90% of men served during the Vietnam conflict compared to slightly less than one quarter of the women.

Persistent Serious Mental Illness and Other Mental Disorders

More than a tenth of the cohort's men and a fifth of the cohort's women met our criteria for persistent serious mental illness (Table 2). Almost three fourths of the men and two thirds of women had persistent PTSD. Except for PTSD, women in the cohort were significantly more likely than men to have received any of the abstracted diagnoses.

Comorbidity with PTSD

Among men in the cohort, 8.4% had persistent PTSD and serious mental illness, 1.7% had persistent serious mental illness only, 68.0% had persistent PTSD only, and 21.8% had neither. Thus, of the 108 men with persistent serious mental illness, 83.3% also had persistent PTSD. Among women in the cohort, 18.3% had persistent PTSD and serious mental illness, 3.3% had persistent serious mental illness only, 47.0% had persistent PTSD only, and 31.4% had neither. Of the 327 women with persistent serious mental illness, 84.7% also had persistent PTSD.

PTSD Symptoms and Functioning

Table 3 shows the observed, unadjusted mean Penn Inventory and SAS-SR scores for respondents with and without persistent serious mental illness at each time point. Because they were so similar to the estimated means generated by repeated measures modeling (details available from the authors upon request), only observed results are reported.

Repeated measures modeling showed that, after controlling for gender and time, respondents with persistent serious mental illness had consistently poorer mean Penn Inventory scores, $F(1, 1724) = 34.64$, $p < .001$, and SAS-SR scores, $F(1, 1724) = 41.39$, $p < .001$, in comparison to those without persistent serious mental illness. For either outcome, there were no statistically significant interactions between persistent serious mental illness and time or between persistent serious mental illness and persistent PTSD (ps > .368)

Figure 1 shows that at Time 1, more than 90% of men and 80% of women with persistent serious mental illness had impaired Penn Inventory scores, as compared to 79% of men and 67% of women without persistent serious mental illness (Panel A). Panel B shows that almost 90% of men and women with persistent serious mental illness had impaired SAS-SR scores, as compared to 80% of men and 86% of women without persistent serious mental illness. Over time all groups improved slightly on both measures, but, as shown in the Figure 1, differences by persistent serious mental illness status were maintained.

Employment

Except for women respondents without persistent serious mental illness, few Time 3 respondents under age 65 reported working for pay at any survey point (Figure 2). Employment rates for men with persistent serious mental illness were particularly low and never exceeded 10%. On repeated measures modeling, there were no statistically significant interactions between time, persistent serious mental illness, and employment ($p = .113$). However, as shown in Table 4, there was a statistically significant interaction between persistent serious mental illness, persistent PTSD, and employment, $F(1, 1429) = 5.27$, $p = .$

022. Consistent with the unadjusted results, persistent serious mental illness was associated with very low averaged employment rates regardless of persistent PTSD status.

Discussion

Almost one tenth of the men and one fifth of the women in this cohort of former PTSD disability applicants had a persistent serious mental illness. Depression and anxiety have frequently been described in clinical samples of veterans with PTSD (Bernardy, et al., 2012; Kehle et al., 2011), but this is the first study to our knowledge to show such striking rates of schizophrenia and bipolar disorder. In the general US population, the lifetime prevalence of schizophrenia is approximately 1.1% (Bourdon et al., 1992), and the lifetime prevalence of bipolar disorders, including subthreshold disorders is about 4.4% (Merikangas et al., 2011). In the VA health care system overall, approximately 3.6% of Veterans have schizophrenia and 3.0%, bipolar disorder (Zivin et al., 2011).

In the present cohort, women were almost two times more likely than the men to have been diagnosed with persistent schizophrenia/schizo-affective disorder or bipolar disorder. In general populations, prevalence rates of bipolar spectrum disorders and schizophrenia are roughly equal between men and women (Bourdon, et al., 1992; McGrath et al., 2008), whereas men are slightly more likely to be diagnosed with schizophrenia in the VA system (Blow et al., 2004). However, in the subset of veterans who apply for PTSD disability benefits, clinicians may have a greater propensity to diagnose serious mental illnesses in women than in men (Dept. of Veterans Affairs, Office of the Inspector General, 2010). Persistent serious mental illness also might be more strongly associated with PTSD diagnosis in women veterans; for example, women veterans with persistent serious mental illness might be more susceptible to experiencing trauma or to developing PTSD after trauma exposure in comparison to men (Neria et al., 2002), or trauma might be a stronger risk factor for later serious mental disorders in women compared to men. There also might be a greater propensity for women with comorbid PTSD and serious mental illness to apply for VA disability benefits as compared to men.

The high prevalence of persistent serious mental illness in this population did not seem be explained by substitution effects. Very few veterans in this cohort had persistent serious mental illness without comorbid persistent PTSD. Serious mental illness may be a correlate —if not an actual risk factor—for applying for VA PTSD disability benefits. Having a thought disorders predicts applying for SSDI/SSI benefits (Estroff, et al., 1997; Kouzis and Eaton, 2000), and it makes sense that thought disorders also might predict application for VA disability benefits. As highly impaired as this cohort proved to be overall, impairments were higher yet among those with persistent serious mental illness.

Given our respondents' high rates of impairment, it is not surprising that they also reported very low employment. Veterans with persistent serious mental illness, with or without accompanying persistent PTSD, were those least likely to report ever working for pay, followed by those with persistent PTSD only. In the U.S. population generally, employment typically exceeds 70% among those under age 65 years (U.S. Bureau of Labor Statistics, 2015) but ranges between 17% and 25% for those with disabilities (U.S. Bureau of Labor

Statistics, 2014). For veterans being treated for bipolar disorder or schizophrenia, employment rates typically range from 10% to 20% (Zivin et al., 2011). During the times studied here, at most only a fifth of women and less than a tenth of men with persistent serious mental illness ever worked for pay.

A number of limitations of the present study should be considered. Although this cohort is representative of the veterans who applied for PTSD disability benefits between 1994 and 1998, the results may not generalize to veterans who applied after this time and in particular may not apply to veterans from more recent military operations. Individuals self-selecting into an all-volunteer armed forces may have more or fewer risk factors for persistent serious mental illness than veterans who were conscripted, for example. Given that earlier treatment appears to result in better outcomes for people with schizophrenia (Melle et al., 2004), it would be especially important to learn whether more recent and younger applicants for PTSD disability benefits also carry high burdens of serious mental illness. A recent review of 500,000 military separations between 2005 and 2006 showed that 4.9% to 11.8% of these veterans had affective psychoses (Dept. of Veterans Affairs Office of the Inspector General, 2010)—a prevalence higher than that of the general population, but not as high as our cohort's. Unfortunately, the authors of that study did not cross-tabulate the prevalence of affective psychosis among those with and without PTSD.

Our results also cannot be generalized to all veterans with PTSD or to non-veterans with PTSD. We may have underestimated this cohort's prevalence of persistent serious mental illness because we did not have medical record information before 1994 or after 2006 and because we did not have access to data from other medical systems. Requiring at least one serious mental disorder diagnosis in 3 separate calendar years may have been overly stringent (Harvey et al., 2012). We also limited our definition of severe mental illness to schizophrenia/schizoaffective disorder and bipolar disorder, but other diagnoses, such as major depression, can be deeply impairing. All of these choices likely reduced the apparent differences between those with and without persistent serious mental illness. Men with schizophrenia were less likely to participate in the Time 3 survey than other men and their under representation could have biased results in unpredictable ways. Finally, the present study is exploratory and not explanatory. We do not know why outcomes were poorer for those with persistent serious mental illness, for example, only that they were. This important question and its corollary—namely, how do we improve these Veterans' well-being—will require further investigation.

In conclusion, to our knowledge this is the largest, longest-running cohort study of former disability applicants that has been conducted. Findings showed that persistent serious mental illness was strikingly high, frequently comorbid with PTSD, and associated with more severe long-term impairments and lower employment. If serious mental illness is indeed a correlate of seeking VA disability benefits, as we speculate, then other subgroups of disability applicants in the VA system, such as those with musculoskeletal pain, might also bear higher than expected burdens of serious mental illness. Our data suggest that this population's overall needs for rehabilitation may be more complex than has been previously appreciated. Women's burden of persistent serious mental illnesses exceeded men's for unclear reasons and should be explored further. Nearly one third of the entire VA budget is

allocated for direct payments to disabled Veterans, yet we know surprisingly little about these veterans' characteristics, challenges, or long-term trajectory. To fashion compassionate, realistic policies for these individuals we must reverse this trend.

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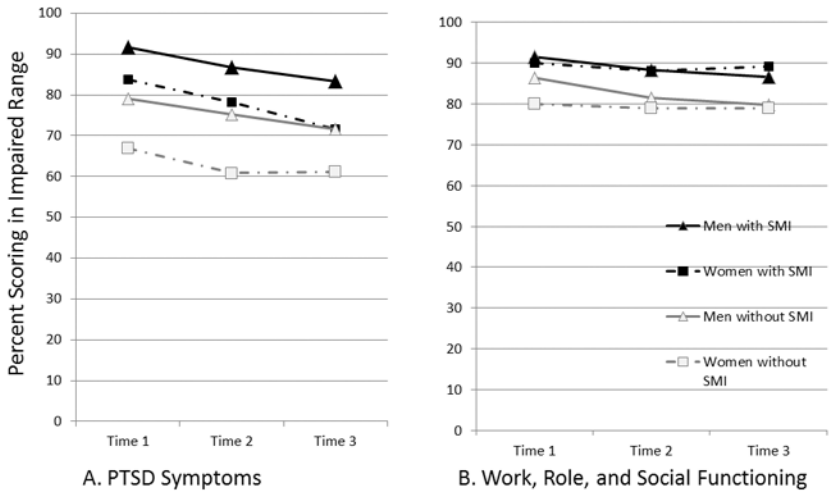

Figure 1.

Percentage of respondents scoring in the impaired range on the Penn Inventory for PTSD (Panel A) and on the Social Adjustment Scale-Self-Report (Panel B). SMI = Persistent Serious Mental Illness.

Time 1 = 1998-2000; time 2 = 2004-2006; Time 3 = 2011-2012

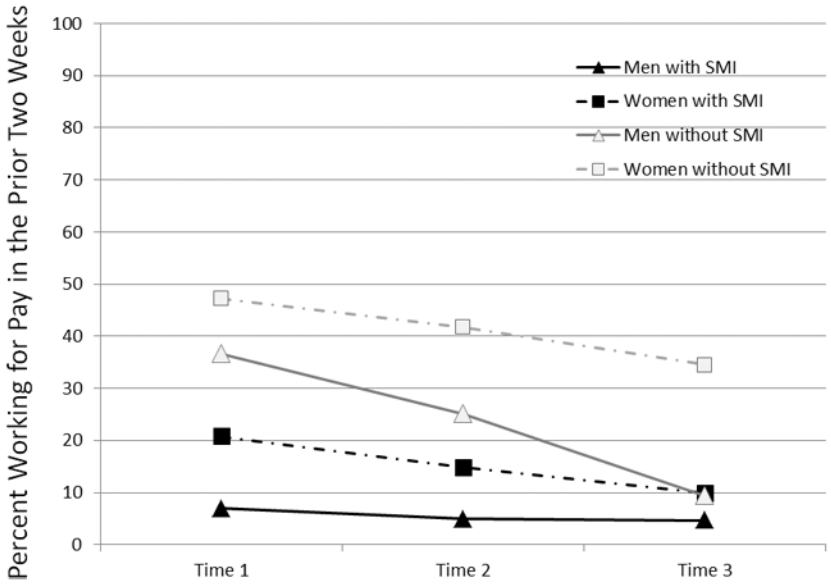

Figure 2.

Percentage of respondents under age 65 at Time 3 who said they worked for pay in the prior two weeks. SMI = Persistent Serious Mental Illness. Time 1 = 1998-2000; Time 2 = 2004-2006; Time 3 = 2011-2012

Table 1

Descriptive Statistics.

Characteristic	Men				Women			
	Cohort		Time 3 Respondents		Cohort		Time 3 Respondents	
	N = 1,067		*n* = 713		*N* = 1,513		*n* = 1,015	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Age	**63.15**	**5.87**	**63.09**	**5.75**	**52.48**	**9.07**	**52.91**	**8.84**
	n	%	*n*	%	*n*	%	*n*	%
Race/ethnicity								
White	750	70.3	506	70.9	1095	72.4	749	73.8
Black or African American	187	17.5	125	17.5	286	18.9	185	18.2
Hispanic or Latino	76	7.1	47	6.6	71	4.7	46	4.5
Other	54	5.1	35	4.9	61	4.0	35	3.4
Served during the Vietnam conflict	933	87.4	644	90.3	343	22.7	248	24.4
At least some college experience[a]	590	55.3	424	59.4	1274	84.2	857	84.4
Married[a]	608	57.0	409	57.4	551	36.4	365	36.0

[a]As of the Time 1 (1998-2000) survey. Time 3 respondents are the subset of the cohort who returned Time 3 surveys.

Table 2

Burden of Persistent Serious Mental Illness and Other Mental Health Disorders by Gender-- Based on VA Chart Diagnoses between 1994 and 2006

Diagnosis	Cohort Men *N* = 1,067		Cohort Women *N* = 1,513	
	n	**%**	***n***	**%**
Persistent serious mental illness	108	10.1	327	21.6***
Persistent PTSD	816	76.5	988	65.3***
Serious mental illness, diagnosed ever				
Bipolar disorder	212	19.9	495	32.7***
Schizophrenia or Schizo-affective disorder	127	11.9	269	17.8***
Other mental health disorders, diagnosed ever				
Anxiety disorder	426	39.9	778	51.4***
Depressive disorder	761	71.3	1201	79.4***
PTSD	931	87.3	1230	81.3***

PTSD = Posttraumatic stress disorder.

*** $p < .001$

Table 3

Observed, Unadjusted Penn Inventory for PTSD and Social Adjustment-Self-Report Scores over Time by Persistent Serious Mental Illness Status and Gender (Time 3 Respondents Only)

Scores	Time 1				Time 2				Time 3			
	With SMI		Without SMI		With SMI		Without SMI		With SMI		Without SMI	
Men	*n* = 60		*n* = 653		*n* = 60		*n* = 653		*n* = 60		*n* = 653	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Penn Inventory	55.06	14.85***	47.35	15.28	48.15	15.00**	42.59	14.52	44.65	14.06	41.20	14.55
SAS-SR	3.21	0.73***	2.81	0.71	2.96	0.75*	2.71	0.73	2.84	0.71**	2.60	0.66
Women	*n* = 222		*n* = 793		*n* = 222		*n* = 793		*n* = 222		*n* = 793	
Penn Inventory	48.32	13.33***	40.91	14.91	43.43	14.42***	37.56	14.87	41.43	14.14***	37.61	14.34
SAS-SR	2.99	0.71***	2.65	0.72	2.89	0.73***	2.60	0.71	2.81	0.69***	2.60	0.68

Time 1 = 1998 – 2000; Time 2 = 2004 – 2006; Time 3 = 2001 – 2012. SMI = with persistent serious mental illness. Penn Inventory = Penn Inventory for PTSD. SAS-SR = Social Adjustment Score-Self-Report.

*** $p \leq .001$,

** $p \leq .01$,

* $p \leq .05$

Table 4

Time 3 Respondents under Age 65 who had Worked for Pay in the Prior Two Weeks, Averaged over Time (1998-2012), by Persistent Serious Mental Illness and PTSD Status

Status	N	Estimated Averaged Percentage (%)	95% CI
SMI with PTSD	224	9.5	[7.1, 12.5]
SMI without PTSD	30	10.4	[4.9, 24.8]
No SMI with PTSD+	786	22.3	[19.9, 24.8]
No SMIwithout PTSD−	394	47.1	[42.9, 51.3]

Results of a marginal (population-averaged) repeated measures model controlling for gender-stratified sampling and within-subject correlation over time. CI= Confidence Intervals. SMI = persistent serious mental illness. PTSD = persistent PTSD.