

# Does Post-Traumatic Stress Disorder Affect Employment?

Kelly M. Lee  
ECON 4990 Senior Seminar  
T, Th. 9:30 – 10:45  
Professor Swinton  
March 12, 2015

## Abstract:

Post-Traumatic Stress Disorder (PTSD) is an increasingly common problem for military personnel. In addition to PTSD's physical and psychological impact, it may hamper a veteran's ability to find and maintain employment. Using data from Wave IV of The National Longitudinal Study of Adolescent to Adult Health (Add Health), I estimate a probit model designed to analyze the effect of Post-Traumatic Stress Disorder on employment. I find that being diagnosed with PTSD does impact employment but is only significant at the 10 percent level. However, PTSD often goes undiagnosed. Interestingly, Add Health also contains data on time spent in a combat zone, combat engagements and exposure to dead or wounded allies, enemies and civilians. When using these alternative measures, I find that exposure to situations often found to cause PTSD does negatively impact employment with significantly larger decreases in the probability of employment. These findings suggest that PTSD may affect employment, but there could be a measurement error in that many cases are likely going undiagnosed.

## **Does Post-Traumatic Stress Disorder Affect Employment?**

### **I. Introduction**

More than 1.5 million U.S. soldiers have been deployed to Iraq and Afghanistan since 2001. The veterans deployed during this time frame are known as Gulf War-era II veterans. In 2008, the estimated pre-deployment incidence of probable Post-Traumatic Stress Disorder (PTSD) was 9 percent. Post-deployment estimates were 12 percent for Operation Enduring Freedom (OEF) in Afghanistan and 18 percent for Operation Iraqi Freedom (OIF) in Iraq (Hoge et al. 2008). The physical and psychological effects of warfare can have a negative impact on a service member's ability to re-acclimate to civilian life.

Finding employment has been more difficult for OEF/OIF veterans when compared with veterans of previous conflicts (Cohen, Suri, Amick and Yan 2013). In 2013, the unemployment rate for all veterans was 6.2 percent. Of the 21 million veterans, 15 percent reported having a service-connected disability. In comparison, 29 percent of Gulf War-era II veterans reported having a service-connected disability with 91,000 unemployed and 1.723 million not in the labor force (Bureau of Labor Statistics 2013). The skills military members learn and acquire during their service are valuable and often transferable to the civilian labor market. These skills are an asset to firms in the form of not only job specific training, but also valuable work habits such as punctuality, discipline and communication skills. Additionally, most veterans returning from Iraq and Afghanistan are more sensitive to the negative effects from unemployment since they are still in their prime earning years (Cohen, Suri, Amick and Yan 2013).

A study by Savoca and Rosenheck (2000) found that PTSD considerably decreased the likelihood of working. A veteran with a lifetime diagnosis of PTSD was 8.5 percentage points

less likely to be employed than a veteran without PTSD. Combat-related PTSD was the most significant determinant of the probability of employment for veterans. A 2010 study by the Society of Human Resource Management (SHRM) found that employers showed good will when it came to hiring veterans but that the goodwill decreased when it came to veterans with disabilities, diminishing the ability of veterans to find and maintain employment.

For this paper I strive to estimate whether PTSD increases, decreases or has no effect on employment using data obtained from the National Longitudinal Study of Adolescent to Adult Health. I will run a probit regression using the following basic model:

$$Employment_i = f(PTSD_i, demographic\ variables_i, military\ service\ variables_i, education_i, other\ health\ variables_i) + \epsilon_i$$

I expect to find that an official diagnosis of PTSD has a negative effect on employment. A study by Rudstam, Gower and Cook (2012) found that 17 percent of employers surveyed hired a veteran who disclosed a disability while 52 percent did not hire a veteran who disclosed a disability. PTSD is a disability which often has a negative connotation because of preconceived assumptions and misperceptions.

## **II. Background**

PTSD is a mental health disorder that is caused by a disturbing event or events. It often has a wide range of symptoms with subtle indicators. Some of these symptoms include intrusive memories, avoidance, negative changes in thinking and mood, and changes in emotional reactions (Mayo Clinic 2014). PTSD was first acknowledged in combat veterans and rape victims, but exposure to any traumatic event can cause PTSD symptoms (Williams, Cahill and Foa 2012). PTSD changes one's perception of them self, others and their overall safety. The National Comorbidity Survey-Replication (NCS-R) indicates that an individual suffering from

PTSD has a higher risk of teenage pregnancy, unemployment, high school and college failure and marital instability (Brunello et al. 2001).

The third edition of the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (DSM-III) saw the addition of PTSD in 1980 (American Psychiatric Association 1980) and was classified as an anxiety disorder. Initially, a traumatic event was defined as a catastrophic stressor outside the scope of usual human experience. The DSM was later revised in 1987, 1994, 2000 and then 2013.

It was not until the fifth edition (DSM-5) in 2013 that a number of important revisions to PTSD were made. By this time, it was clear that PTSD was not just a fear-based anxiety disorder and the definition was extended to include anhedonic and dysphoric symptoms<sup>1</sup>. PTSD is also now categorized as a Trauma and Stressor Related Disorder and no longer classified as only an Anxiety Disorder (Friedman 2014).

When compared to the criteria from DSM-IV, the criteria from DSM-5 more clearly defines what constitutes a traumatic event. Currently, there are eight criteria (A-H) for an official diagnosis of PTSD. Criteria A defines the stressor for PTSD as exposure to, "death, threatened death, actual or threatened serious injury, or actual or threatened sexual violence" (American Psychiatric Association 2013). The stressor can be experienced in one of four ways and at least one is required for a diagnosis:

1. Direct exposure
2. Witnessing in person
3. Indirectly<sup>2</sup>

---

<sup>1</sup> Anhedonic symptoms include those which cause an inability to experience pleasure from things which normally give pleasure. Dysphoric symptoms include those which cause dissatisfaction, anxiety, restlessness or fidgeting.

<sup>2</sup> Indirectly refers to learning a close friend/relative was exposed to a trauma. If the trauma involved actual or threatened death, it must have been accidental or violent.

4. Repeated or extreme indirect exposure to aversive details of the event.<sup>3</sup>

Criteria B addresses intrusion symptoms and defines the traumatic event as being “persistently re-experienced” (American Psychiatric Association 2013). There are five ways this can occur with at least one required for a diagnosis:

1. Recurrent, involuntary, and intrusive memories
2. Traumatic nightmares
3. Dissociative reactions<sup>4</sup>
4. Intense or prolonged distress after exposure to traumatic reminders
5. Marked physiologic reactivity after exposure to trauma-related stimuli

Criteria C addresses avoidance and is defined as “persistent effortful avoidance of distressing trauma-related stimuli after the event” (American Psychiatric Association 2013). The individual is avoiding at least one of the following:

1. Trauma-related thoughts or feelings
2. Trauma-related external reminders<sup>5</sup>

Criteria D deals with negative cognitions and mood and is defined as “negative alterations in cognitions and mood that began or worsened after the traumatic event” (American Psychiatric Association 2013). Two of the following alterations are required:

1. Inability to recall key features of the traumatic event<sup>6</sup>
2. Persistent negative beliefs and expectations about oneself or the world<sup>7</sup>
3. Persistent distorted blame of self or others for causing the traumatic event or for the resulting consequences
4. Persistent negative trauma-related emotions
5. Markedly diminished interest in pre-traumatic activities
6. Feeling alienated from others

---

<sup>3</sup> This is usually in the course of professional duties and does not include indirect nonprofessional exposure through the media, T.V., movies or pictures.

<sup>4</sup> An example of this is flashbacks. The reactions may occur from brief episodes to a complete loss of consciousness.

<sup>5</sup> This includes things such as people, places, conversations, activities, objects or situations.

<sup>6</sup> This is usually dissociative amnesia and is not caused by a head injury, alcohol or drugs.

<sup>7</sup> This is often a distorted belief or expectation.

7. Persistent inability to experience positive emotions

Criteria E addresses alterations in arousal and reactivity that began or worsened after the event. Two of the following alterations are required:

1. Irritable or aggressive behavior
2. Self-destructive or reckless behavior
3. Hypervigilance
4. Exaggerated startle response
5. Problems in concentration
6. Sleep disturbance

Criteria F addresses the duration of the symptoms. For an official diagnosis, the symptoms from Criteria B, C, D, and E must persist for more than one month. A full diagnosis cannot be met until at least six months after the traumatic event has occurred, even though symptoms may occur immediately following the event. Criteria G looks at the functional significance. This addresses how significant an impact the symptoms have on an individual's level of distress and functional impairment. Criteria H adds an exclusion that the symptoms are not due to any medication, substance abuse or other medical issues.

In addition to the above criteria, the individual must exhibit a high level of one of the following:

1. Depersonalization<sup>8</sup>
2. Derealization<sup>9</sup>

More attention is given to the behavioral symptoms often accompanying PTSD in the DSM-5. The symptoms are broken down into four diagnostic criteria (B, C, D and E) with the remaining criteria (F, G and H) addressing duration, significance and exclusions.

---

<sup>8</sup> The experience of being an outside observer or detached from oneself.

<sup>9</sup> The experience of unreality, distance or distortion.

### **III. Literature Review**

With the rise in PTSD diagnoses, there has been a lot of research conducted looking at the impact a diagnosis has on an individual's life. A study conducted by Jason et al. (2011) looked at how a diagnosis of PTSD and type of treatment affects employment, self-regulation and abstinence. Their data included patients who had transitioned from substance use programs back into the community in one of two ways, either to a self-help communal living environment or into usual aftercare. Using an analysis of variance, they found patients with PTSD who transitioned into usual aftercare had significantly worse self-regulation scores than patients with PTSD who transitioned to a self-help communal environment and patients without PTSD who transitioned to either a usual aftercare or the self-help environment.

Using a chi-square test, they found no significant difference between the unemployment rates of patients with PTSD in the self-help communal environment and usual aftercare. When it came to substance use, they found that of the patients who transitioned to the self-help communal environment, 41 percent of patients with PTSD relapsed compared to 28 percent of patients without PTSD.

Another study by Burnett-Zeigler et al. (2011) looked at civilian employment among National Guard veterans returning from Afghanistan and Iraq. They used anonymous surveys assessing mental health and substance use problems, functional status and mental health treatments completed by National Guard service members. Using a multivariable logistic regression, they found 41 percent of National Guard service members were employed 45 to 60 days after demobilization. They also found that service members who were female, younger and unmarried were less likely to be employed while service members deployed more than once and reported recent combat exposure were more likely to be employed.

Marcotte and Wilcox-Gök (2003) used both a quantile regression and ordinary least squares (OLS) to look at the estimated earnings losses because of mental illness. When using OLS, they found that for women, only anxiety disorders significantly decrease earnings by 11.7 percent when compared to women without anxiety disorders. When using a quantile regression, they again found that for women, only anxiety disorders had a significant negative impact on earnings. Using both techniques, they found no evidence to suggest mental illness has an effect on earnings for men.

#### **IV. Data**

The data for my research comes from the National Longitudinal Study of Adolescent to Adult Health (Add Health), a study which follows adolescents into their early adulthoods. The study consists of panel data collected from four in-home interviews, categorized as Wave I, II, III and IV, with the earliest in 1994 and the most recent in 2008.

My dataset contains 21 independent variables comprised of 1 PTSD variable, 7 demographic variables, 12 education variables and 1 military variable (See Appendix A - Table 1). I combined the demographic data from Wave I with the data from Wave IV to create my complete dataset. With the combined waves, my initial number of observations was 6,504. However, once the datasets were merged, there were 1,309 observations which had a significant amount of missing data. I dropped those observations along with 26 others leaving a total of 5,088 observations.

#### **V. Model**

I estimate the following probit model to observe the effect an official diagnosis of PTSD has on employment:

$$P(\text{Currently\_Working\_at\_least\_10}_i) = \beta_0 + \beta_1 * PTSD_i + \beta_2 * Age_i + \beta_3 * Military_i + \beta_4 * Ed\_8th\_or\_less_i + \beta_5 * Ed\_Some\_HS_i + \beta_6 * Ed\_HS_i +$$

$$\begin{aligned} & \beta_7 * Ed\_Some\_Voc\_Tech_i + \beta_8 * Ed\_Complete\_Voc\_Tech_i + \\ & \beta_9 * Ed\_Some\_College_i + \beta_{10} * Ed\_Some\_Grad_i + \beta_{11} * Ed\_Masters_i + \\ & \beta_{12} * Ed\_Beyond\_Masters_i + \beta_{13} * Ed\_Doctoral_i + \beta_{14} * Ed\_Some\_Post\_Prof_i + \\ & \beta_{15} * Ed\_Complete\_Post\_Prof_i + \beta_{16} * Female_i + \beta_{17} * Race\_Hispanic_i + \\ & \beta_{18} * Race\_African\_American_i + \beta_{19} * Race\_Asian_i + \beta_{20} * Race\_Other_i + \varepsilon_i \end{aligned}$$

*Currently\_Working\_at\_least\_10* is my dependent variable. It is a measure to determine if an individual is working at least 10 hours a week. For my research, this is the definition I am using for employment. Anything less than 10 hours is considered to be not working. It is a dummy variable where a value of 1 equals working 10 or more hours and a value of 0 equals working less than 10 hours a week or not working at all. The mean is 0.659, showing that 65.9 percent of the sample is employed with a standard deviation of 0.474.

*PTSD* is my key independent variable. It is a dummy variable which measures if an individual has an official diagnosis of PTSD. The variable has a value of 1 for a diagnosis and a value of 0 if there is no diagnosis. The mean is 0.030 showing that 3 percent of my sample is diagnosed with PTSD with a standard deviation of 0.173. *Military* is a dummy variable denoting any military service and includes all branches (Army, Air Force, Navy, Marine Corps and Coast Guard) and any length of time served. The mean is 0.066, showing that 6.6 percent of my sample served in the military with a standard deviation of 0.248 (See Appendix A - Table 2).

One potential problem with my PTSD variable is possible measurement error. Due to the generally negative perception associated with PTSD, individuals may not want to admit to having the disorder. An individual may also have PTSD but has not been officially diagnosed. The NCS-R shows that lifetime PTSD rates are higher than originally thought with American men at 3.6 percent and American women at 9.7 percent (Kessler et al. 2005). These rates are significantly higher in post-conflict settings (De Jong et al. 2001). In order to address this issue,

I will estimate five variations of my model using variables which are intended to measure traumatic stressors that are typically associated with a PTSD diagnosis as per DSM-5.

## **VI. Results**

I find that being diagnosed with PTSD has a negative impact on employment at the 10 percent level when using a probit model. When diagnosed, the probability of being employed decreases by 6.5 percentage points. I expected the magnitude to be larger. However, PTSD often goes undiagnosed. Add Health also contains data on the number of months spent in a combat zone, exposure to dead or wounded allies, enemies and civilians and whether the individual was actually engaged in combat. When using these alternative measures, I find that exposure to situations often found to cause PTSD has a larger negative impact on employment than a PTSD diagnosis. The magnitude and statistical significance of the other variables do not change significantly across specifications (See Appendix A - Table 3).

When I replace my PTSD variable with *Months\_in\_Combat*, I find that the number of months in combat is significant at the 5 percent level with a negative impact on employment. The probability of being employed decreases by 1.1 percentage points for every additional month in combat. When PTSD is replaced with *Combat\_Engagements*, I find that it is significant at the 1 percent level with a negative impact on employment. This decreases the probability of employment by 16.31 percentage points (See Appendix A - Table 4).

When PTSD is replaced with *Saw\_Dead\_Wounded\_Ally* the probability of employment decreases by 27.58 percentage points and is significant at the 1 percent level. When replaced with *Saw\_Dead\_Wounded\_Enemy*, the probability of employment decreases by 18.89 percentage points and is significant at the 5 percent level. When replaced with *Saw\_Dead\_Wounded\_Civ*, the probability of employment decreased by 25.47 percentage points and is significant at the 1

percent level (See Appendix A - Table 4). These findings strongly suggest that exposure to PTSD triggers does affect employment more than the original estimates. The effect of a PTSD diagnosis may be underestimated due to measurement error caused by many cases being undiagnosed.

Additionally, I find being in the military is significant at the 1 percent level with the probability of being employed decreasing by 12.72 percentage points. This finding is unexpected and could possibly be explained by potential multicollinearity between PTSD and being in the military. The negative impact from PTSD could be putting downward pressure on being in the military. I did not drop my military variable since this could create omitted variable bias.

There are some limitations with my model. As mentioned above, there is potential multicollinearity between PTSD and being in the military. Even when PTSD is replaced with the other variables, this multicollinearity would still exist. There are also some omitted variables in my model, such as marital status, any previous health issues and family medical history. Since these variables are not being held constant, my estimated coefficients may be biased.

## **VII. Conclusion**

My results suggest that an official diagnosis of PTSD has a negative impact on the probability of employment. Although this negative impact is smaller than expected, it still suggests that PTSD may be underdiagnosed or that individuals suffering from PTSD may not be getting the treatment they need in order to manage their disorder. This magnitude becomes even larger when PTSD is replaced with other variables which are known to be contributing factors to PTSD. The probability of finding employment decreases as the individual is exposed to traumatic stressors.

One implication of my findings is that because of the negative perception people have about PTSD, individuals suffering with symptoms may not be reaching out for help. There could also be policies in place which make it hard for these same individuals to get treatment (Mangan 2012). PTSD is an increasingly common problem for military personnel (Zoroya 2011). The military may need to look at their pre- and post-deployment screening practices for service members. In addition to PTSD's physical and psychological impact, it can significantly hamper a veteran's ability to find and maintain employment.

## Appendix A - Tables

**Table 1. Variable Definitions and Expected Sign**

Variable	Definition	Expected Sign
Currently Working at least 10 hours	Dummy variable =1 if individual is working at least 10 hours a week; 0 otherwise	Dependent variable
PTSD	Dummy variable =1 if officially diagnosed with PTSD; 0 otherwise	(-)
Age	Age of individual <i>i</i>	(+/-)
Female	Dummy variable =1 if Female; 0 otherwise	(-)
Race	Dummy variables denoting race of each individual	
Hispanic	=1 if Hispanic; 0 otherwise	(-)
African American	=1 if African American; 0 otherwise	(-)
American Indian	=1 if American Indian; 0 otherwise	(-)
Asian	=1 if Asian; 0 otherwise	(+)
Other	=1 if Other; 0 otherwise	(+/-)
Military	Dummy variable =1 if served in the military; 0 otherwise	(+)
Education Level	Dummy variables denoting highest level of education achieved	
8th grade or less	=1 if 8th grade or less; 0 otherwise	(-)
Some High School	=1 if some high school; 0 otherwise	(-)
High School	=1 if graduated high school; 0 otherwise	(-)
Some Vocational or Technical School	=1 if some vocational or technical school; 0 otherwise	(+/-)
Completed Vocational or Technical School	=1 if completed vocational or technical school; 0 otherwise	(+)
Some College	=1 if some college; 0 otherwise	(+/-)
Some Graduate School	=1 if some graduate school; 0 otherwise	(+)
Masters	=1 if completed a master's program; 0 otherwise	(+)
Beyond Masters	=1 if beyond a master's program; 0 otherwise	(+)
Doctoral	=1 if completed a doctoral program; 0 otherwise	(+)
Some Post Professional	=1 if some post graduate professional; 0 otherwise	(+)
Completed Post Professional	=1 if completed a post graduate professional program; 0 otherwise	(+)
Months in Combat	The number of months spent in a combat zone	(-)
Combat Engagements	=1 if individual engaged in combat; 0 otherwise	(-)

**Table 1 (cont.)**

<b>Variable</b>	<b>Definition</b>	<b>Expected Sign</b>
Saw Dead/Wounded Ally	=1 if individual saw a dead or wounded ally; 0 otherwise	(-)
Saw Dead/Wounded Enemy	=1 if individual saw a dead or wounded enemy; 0 otherwise	(-)
Saw Dead/Wounded Civilian	=1 if individual saw a dead or wounded civilian; 0 otherwise	(-)

**Table 2. Summary Statistics**

<b>Variable</b>	<b>Observations</b>	<b>Mean</b>	<b>Std. Dev.</b>
Currently Working at least 10 hours	5088	0.66	0.47
PTSD	5088	0.03	0.17
Age	5088	28.93	1.78
Female	5088	0.54	0.50
Race			
Hispanic	5088	0.10	0.31
African American	5088	0.24	0.43
American Indian	5088	0.04	0.19
Asian	5088	0.04	0.19
Other	5088	0.06	0.24
Military	5088	0.07	0.25
Education Level			
8th grade or less	5088	0.00	0.06
Some High School	5088	0.08	0.26
High School	5088	0.16	0.37
Some Vocational or Technical School	5088	0.04	0.19
Completed Vocational or Technical School	5088	0.06	0.24
Some College	5088	0.33	0.47
Some Graduate School	5088	0.04	0.19
Masters	5088	0.05	0.22
Beyond Masters	5088	0.01	0.11
Doctoral	5088	0.01	0.08
Some Post Professional	5088	0.01	0.09
Completed Post Professional	5088	0.01	0.12
Months in Combat	5088	0.32	2.72

**Table 2 (cont.)**

Variable	Observations	Mean	Std. Dev.
Combat Engagements	5088	0.02	0.13
Saw Dead/Wounded Ally	5088	0.01	0.10
Saw Dead/Wounded Enemy	5088	0.01	0.09
Saw Dead/Wounded Civilian	5088	0.01	0.08

**Table 3. Initial Estimation Results**

Variable	Probit Coefficient	Robust Standard Error	Marginal Effect
PTSD*	-0.174	0.104	-0.065
Age	0.012	0.010	0.004
Female***	-0.258	0.038	-0.094
Hispanic	-0.007	0.076	-0.003
African American	-0.048	0.043	-0.018
American Indian	0.069	0.100	0.025
Asian***	-0.291	0.097	-0.111
Other	-0.006	0.096	-0.002
Military***	-0.332	0.075	-0.127
8th grade or less	-0.462	0.313	-0.180
Some High School	-0.363	0.077	-0.139
High School	-0.208	0.062	-0.078
Some Vocational or Technical School	-0.150	0.104	-0.056
Completed Vocational or Technical School	0.061	0.085	0.022
Some College	0.028	0.053	0.010
Some Graduate School	-0.130	0.101	-0.049
Masters	0.110	0.093	0.039
Beyond Masters	0.054	0.180	0.020
Doctoral	0.202	0.254	0.071
Some Post Professional	-0.751	0.207	-0.293
Completed Post Professional	0.023	0.162	0.008

**Notes:** \*\*\* Significant at 1% \*\* Significant at 5% \* Significant at 10%

**Table 4.****Secondary Estimation Results**

<b>Variable</b>	<b>Probit Coefficient</b>	<b>Robust Standard Error</b>	<b>Marginal Effect</b>
Combat Engagements***	-0.4213	0.1592	-0.1632
Months in Combat**	-0.0309	0.0128	-0.0113
Saw Dead/Wounded Ally***	-0.7076	0.1877	-0.2758
Saw Dead/Wounded Enemy**	-0.4858	0.2116	-0.1890
Saw Dead/Wounded Civilian***	-0.6526	0.2248	-0.2547

**Notes:** \*\*\* Significant at 1% \*\* Significant at 5% \* Significant at 10%

## References

- American Psychiatric Association. 1980. *Diagnostic and Statistical Manual of Mental Disorders*, 3e. Washington D.C.
- American Psychiatric Association. 2013. *Diagnostic and Statistical Manual of Mental Disorders*, 5e. Washington D.C.
- Brunello, N., et al. 2001. Posttraumatic stress disorder: Diagnosis and epidemiology, comorbidity and social consequences, biology and treatment. *Neuropsychobiology* 43: 150-162.
- Bureau of Labor Statistics. 2013. Employment status of veterans 18 years and over by presence of service-connected disability, reported disability rating, period of service, and sex, August 2013, not seasonally adjusted. <http://www.bls.gov/news.release/vet.t07.htm>. (Accessed September 18, 2014.)
- Burnett-Zeigler, I., et al. Civilian employment among recently returning Afghanistan and Iraq national guard veterans. *Military Medicine* 176(6): 639-646.
- Cohen, S.I., P. Suri, M. Amick and K. Yan. 2013. Clinical and demographic factors associated with employment status in US military veterans returning from Iraq and Afghanistan. *Work* 44(2): 213-219.
- De Jong, J., et al. 2001. Lifetime events and Posttraumatic Stress Disorder in 4 postconflict settings. *Journal of the American Medical Association* 286(5): 555-562.
- Friedman, M. PTSD history and overview. <http://www.ptsd.va.gov/professional/PTSD-overview/ptsd-overview.asp>. (Accessed September 21, 2014.)
- Hoge, C.W., et al. 2008. Mild traumatic brain injury in U.S. soldiers returning from Iraq. *The New England Journal of Medicine* 358(5): 453-463.
- Jason, L.A., et al. 2011. How type of treatment and presence of PTSD affect employment, self-regulation, and abstinence. *North American Journal of Psychology* 13(2): 175-186.
- Kessler, R.C., et al. 2005. Prevalence, severity, and comorbidity of 12-month DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry* 62(6): 617-627.
- Mangan, T. 2012. Government's PTSD programs need improvement, not funding cuts. August 8. <http://www.examiner.com/article/government-s-ptsd-programs-need-improvement-not-funding-cuts>. (Accessed January 22, 2015).
- Marcotte, D. and V. Wilcox-Gök. 2003. Estimating earnings losses due to mental illness: a quantile regression approach. *The Journal of Mental Health Policy and Economics* 6: 123-134.

- Mayo Clinic. Post-traumatic stress disorder. <http://www.mayoclinic.org/diseases-conditions/post-traumatic-stress-disorder/basics/symptoms/con-20022540>. (Accessed September 19, 2014.)
- Rudstam, H., W. Gower and L. Cook. 2012. Beyond yellow ribbons: Are employers prepared to hire, accommodate and retain returning veterans with disabilities. *Journal of Vocational Rehabilitation* 36(2): 87-95.
- Savoca, E. and Rosenheck, R. 2000. The civilian labor market experiences of Vietnam-era veterans: the influence of psychiatric disorders. *The Journal of Mental Health Policy and Economics* 3: 199-207.
- Society for Human Resource Management. 2010. Employing military personnel and recruiting veterans: Attitudes and practices SHRM poll. <http://www.shrm.org/Research/SurveyFindings/Articles/Pages/EmployingMilitaryPersonnelRecruitingVeterans.aspx>. (Accessed September 19, 2014.)
- Williams, M., S. Cahill, and E. Foa. 2010. Psychotherapy for post-traumatic stress disorder. In *Textbook of Anxiety Disorders*, 2e. Washington D.C.: American Psychiatric Publishing.
- Zoroya, G. 2011. Rise in PTSD cases from two wars strains resources. *USA Today*, November 30. <http://usatoday30.usatoday.com/news/military/story/2011-11-29/PTSD-cases-rise/51476604/1>. (Accessed January 22, 2015).