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META-ANALYSIS OF VETERANS WITH POSTTRAUMATIC STRESS DISORDER AND THE ASSOCIATION WITH CRIMINAL BEHAVIOR

BY

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DEDICATION

This thesis is dedicated to my family and friends who have supported me through this journey, I would not be where I am today if it were not for you guys.

Also, I would like to recognize all the men and women of the United States military who have dedicated their lives to this country. I hope this research assist in your journey abroad and at home.

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ABSTRACT OF THE THESIS

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Posttraumatic stress disorder (PTSD) is one of the most common disabling disorders present among returning military personnel, especially those in combat. Many veterans will not receive treatment for PTSD due to the stigma and lack of understanding from the community and their family. Without the proper education and coping skills, one could turn to substance abuse or suicidality. More recently it has been reported that there is an association between veterans with PTSD and criminal or aggressive behavior; to what extent, the results have varied. This is accompanied by an alarming rate of incarcerated veterans. Therefore, it is important to bridge the gap between veterans with PTSD and criminal or aggressive behavior to construct effective intervention and treatment programs. A Meta-

Analysis was conducted on studies that evaluated Operation Iraqi Freedom (OIF), Operation Enduring Freedom (OEF), and Operation New Dawn (OND) military veterans diagnosed with posttraumatic stress disorder (PTSD) and the prevalence of their involvement in the criminal justice system. The studies contained in the analysis were published from January 2007 to November 2017 with participants who are former military. The review supported previous research in that there is an increased rate of violence and aggression among veterans with PTSD.

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CHAPTER 1

THE PROBLEM STATEMENT

Introduction

Posttraumatic stress disorder symptoms have been recorded among Iraq and Afghanistan War veterans at an alarming rate, which places them at a higher risk for being diagnosed with the disorder. Past research has found a positive association between PTSD and aggressive, violent, and antisocial behaviors among Vietnam War veterans. It was found that 30% of Vietnam veterans suffered from PTSD (Sherman, Fostick, & Zohar, 2014). Furthermore, returning veterans of Operation Enduring Freedom (OEF), Operation Iraqi Freedom (OIF), and Operation New Dawn (OND) are being incarcerated at high rates. The number of veterans incarcerated has decreased over the years, but not by much. This could be due to the increased support and attention provided to OIF/OEF/OND veterans by Veteran Affairs (Tsai, Rosenheck, Kasprow, & McGuire, 2013). However, a study conducted by Tsai et al. (2013), revealed that 38% of OIF/OEF/OND veterans incarcerated were convicted of a violent offense, which is more than other veteran populations. According to the study, violent offenses included murder, manslaughter, robbery, and assault (Tsai et al., 2013). The Bureau of Justice Studies (2015) noted that in 2011-2012, approximately 8% of inmates in state and

federal prisons and local jails were veterans. This suggests that there may be a link between criminal behavior and PTSD among veterans.

Problem Statement

There has been conflicting information regarding OEF/OIF/OND veterans engaging in aggressive and/or criminal behavior post-deployment. For example, Teachman and Tedrow (2016), revealed that there is no evidence that military service, including combat exposure increases one's likelihood of being involved in crimes. The public perception is that veterans are more likely to commit crimes and be aggressive. However, research has reported the opposite-that veterans are less likely to be incarcerated. The prevalence of violence among post-9/11 war veterans is 19.5% compared to 7.5% in the U.S general population of adults (Norman, Elbogen, & Schnurr, 2017). A higher proportion (64%) of veterans were sentenced for violent offenses than non-veterans (48%) (Bureau of Justice Statistics, 2015). To better evaluate the relationship between PTSD and criminal behavior, it is important to understand the risk and protective factors. It is essential to note that some veterans have difficulty controlling their emotion (emotional regulation); this leads to a higher susceptibility for criminal behavior.

Current treatment programs need to overcome obstacles in getting veterans the proper treatment needed for recovery and to decrease the program dropout rate. There is a further need for more intervention programs to reduce aggression and prevent future criminal behavior.

Purpose of Study

It is important to study violent criminal behavior among OEF/OIF/OND veterans to create reliable treatment programs and interventions to replace jail/prison time with rehabilitation. The mental health of military personnel affects the vigilance, actions, and safety of veterans and the public. Although most criminal behavior is considered non-violent, it is important to note veterans' increased propensity towards violence. There is a need for innovative ways for veterans with PTSD to receive treatment; this should include community services, since some will seek treatment outside of the VA system. This should provide guidance necessary to receive the appropriate tools and education for handling the special needs of our returning veterans.

Research Questions/Objectives

The aim of this study is to systematically review studies that cover prevalence of violence, aggression, and criminal behavior among Iraq and Afghanistan veterans who have been diagnosed with PTSD. The results will be used to clarify

prevalence of violent, aggressive and criminal behaviors among veterans and are expected to reveal increased rates of involvement in the criminal justice system among veterans with PTSD. The goal is to bridge the gap between PTSD and aggressive, and criminal behavior while discussing theories to explain this behavior and methods to assess the behavior. The research results can also be used by Veteran Affairs and Department of Defense for veterans to create effective transitional and treatment programs.

Delimitations

This study focuses on OEF/OIF/OND war veterans and will not include Vietnam War veterans. This study will also not focus on comorbid issues such as substance abuse, other psychiatric issues, unemployment, and homelessness.

Assumptions

Veterans with PTSD are more likely to commit crime and display aggressive behavior.

Definitions of Key Terms

Aggression. hostile or violent behavior toward another (Angkaw et al., 2013).

Anger. an emotional state caused by frustration or provocation that can range from annoyance to rage (Teten et al., 2010).

Combat. a violent conflict among opposing military forces to take dominance over another (Wilk et al., 2015).

Criminal Behavior. behavior that violates societal norms or laws and is punishable by law enforcement officials (Elbogen et al., 2014b).

Hostility. Opposition toward someone or something (Jakupak et al., 2010).

Life Course Perspective. to examine crime in one's life to asses' trends and trajectories (Teachman & Tedrow, 2016).

Operation Enduring Freedom (OEF). a United States-led coalition to describe the Global War on Terrorism from 2001 to 2014 in Africa, Philippines, and Afghanistan. The term OEF will primarily refer to the war in Afghanistan (Green et al., 2016).

Operation Iraqi Freedom (OIF). a United States-led coalition in Iraq between 2003-2010 with the goal of taking down Saddam Hussein's government (Green et al., 2016).

Operation New Dawn (OND). a United States-led coalition in Iraq that replaced OIF after 2010 (Tsai et al., 2013).

Post-Traumatic Stress Disorder. a mental disorder that develops- after one is exposed to or experiences a traumatic event (APA, 2013).

Veteran. an individual who has served in the United States Armed Forces (Erickson, 2016).

Violence. threatening or inflicting serious bodily injury upon another (Norman, Elbogen, & Schnurr, 2017).

Violent Veteran Model. the theory that soldiers with combat experience are predisposed to criminal behavior and PTSD symptoms since they are more skilled and accepting of violence (Van Dyke & Orrick, 2017).

Chapter 2

LITERATURE REVIEW

Introduction

Post-traumatic stress disorder (PTSD) is the third most common debilitating disorder among returning veterans (Guina, Welton, Broderick, Correll, & Pierson, 2016). More and more veterans have returned home from war with mental health issues, long-lasting pain, and physical trauma (Baldwin, 2017). Veterans with PTSD, specifically those involved in combat, reportedly have a higher likelihood of being involved in the criminal justice system. In 2015, over 600,000 Afghanistan and Iraq War Veterans under Veterans Affairs (VA) care were diagnosed with PTSD. Seemingly, there were more veterans from this war era than any other who visited the VA for concerns relating to PTSD, including therapy (Smith et al., 2017). In 2016 Ghaffarzadegan, Ebrahimvandi, and Jalali found that approximately 11-20% of veterans from Operations Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) were diagnosed with PTSD. PTSD is important to study because it affects veterans at a disproportionately higher rate than it does the civilian population (Porter, Bonanno, Frasco, Dursa, & Boyko, 2017).

Seventy-five percent of OIF/OEF veterans receiving compensation for mental illness have PTSD (Guina, Welton, Broderick, Correll, & Pierson, 2016). There is also a higher lifetime prevalence of PTSD in those exposed to combat. Individuals who have military-related PTSD diagnosis experience more persistent symptoms (Miller, 2015). Forty percent of veterans who were diagnosed with PTSD were reported to have committed a violent crime following the diagnosis. There is higher prevalence of hostility among veterans who are diagnosed with PTSD and have combat exposure as opposed to those with non-combat related experience with PTSD (Smith, 2014).

The mental health of our military community, especially those diagnosed with PTSD, is important and should be a focus of study, so as to assist with readjustment into the community and to ensure there are reliable treatment and intervention programs. Understanding the factors associated with the probability of returning veteran obtaining mental health treatment could help identify areas of outreach during this crucial period (Smith et al., 2017).

It is important to understand and treat PTSD among veterans. However, there are barriers to treatment, including the stigma related to mental health diagnosis and the cost for treatment according to the Department of Defense Task Force on Mental Health (2007) (as cited in Baldwin, 2017). The results

vary on the correlation between PTSD and criminal behavior. Therefore it is important to clarify the link between the two concepts.

Post-Traumatic Stress Disorder (PTSD)

History. Wartime-related trauma initially used to be an “irritable heart” among American Civil War soldiers during the 1860s. Irritable heart was considered a stress-related disorder. After the advancement in weapons, irritable heart became known as “shell shock” due to soldiers’ encounters with exploding shells (Guina, Welton, Broderick, Correll, & Pierson, 2016). Symptoms of shell shock included sleep problems and panic, which at that was thought to be due to damage to the brain from the weaponry (Friedman, 2015). During World War II the shell shock diagnosis was then replaced with Combat Stress Reaction (CSR), in which long deployments caused soldiers to become battle weary (Friedman, 2015).

The Diagnostic and Statistical Manual of Mental Disorders (DSM) DSM created and outlined “gross stress reduction” due to “combat or civilian catastrophe” in 1952 to address the increase in caseload of psychiatric assistance among Armed Forces veterans returning from World War II (Guina et al., 2016). PTSD was officially added to the Diagnostic and Statistical Manual of Mental Disorders (DSM)-III in 1980.However, the definition of trauma was limited and only contained three symptoms clusters,

namely re-experiencing, avoidance/numbing, and arousal (Guina, Welton, Broderick, Correll, & Pierson, 2016). It also required that one experiences a traumatic event that would be outside of the norm of human experiences (Adler & Hoge, 2008).

Symptoms. Recently, the DSM-V has updated the diagnostic criteria for PTSD to include military implications, all of which are used to determine veteran's benefits and fitness for duty (Guina et al., 2016). Criterion A2, the subjective response to a traumatic event, was removed. Criterion C was divided into active versus passive avoidance. Finally, new cluster of symptoms was created under Criterion D for negative alterations (O'Donnell et al., 2014). The criterion that covered "intense fear, helplessness, or horror" was eliminated due to the fact that everyone responds to trauma differently and some may have a delayed onset of symptoms (Guina et al., 2016). The trauma criteria were changed in order to allow indirect exposure for those who are in the boundaries of a combat zone, including learning of a friend's death or trauma that was violent or accidental or repeated or extreme exposure to "aversive details" to a work-related traumatic event. Between the DSM-IV-TR and DSM-V the disorder was moved from the "anxiety disorders" category to the "trauma- and stressors-related disorders" category. These changes were believed to improve treatment and diagnosis, however, some argue it could have a negative impact

on legal, clinical, and occupational implications (Guina et al., 2016). For example, the rate of over-diagnosis could increase due to the new wide-ranging trauma criteria, which has an impact on insurance claims. The issue of malingering is occurring among service members, in that 37-75% exaggerating or malingering reporting PTSD. Individuals could over-report or under-report symptoms for reasons such as decreased legal liability, denial of mental issues, disability income, negative impact on one's career, or being seen as weak. One concern is that a diagnosis of PTSD may qualify one as unfit for duty, which would result in their having to leave their military career (Guina et al., 2016). There are some who may experience trauma-related distress however do not fit the criteria for PTSD, such as those who experience guilt or shame based on their own actions or those of others. These types of symptoms are all common among those with PTSD, however they are not included in the DSM-V.

The changes in the diagnostic criteria between the DSM-IV and DSM-V have been problematic for veterans diagnosed with PTSD. In a study conducted by Hoge, Riviere, Wilk, Herrell, and Weathers (2014), that compared the new PTSD Checklist (PCL) to the previous version (PCL-S) among 1800 infantry soldiers, it was determined that 30% of the soldiers who met the DSM-IV-TR symptom criteria did not meet the DSM-V symptom criteria. The DSM-V criteria have a large focus on one's internal conflicts

(Mcfarlene, 2014). These changes were implemented to create a more inclusive profile of one's symptom responses (O'Donnell et al., 2014).

There also seems to be a discrepancy in the number of current service members diagnosed with PTSD than former military members with PTSD, which could be explained by the way veterans express their PTSD symptoms and their willingness validate possible symptoms of PTSD due to the stigma (Dursa, Reinhard, Barth, & Schneiderman, 2014). In 2008, approximately 11% of military personnel deployed during OEF/OIF had PTSD. In a national study conducted by the Bureau of Justice Statistics, 23% of veterans in prison reported they were told by a mental health official they had PTSD compared to 11% of non-veterans (Bronson, Carson, Noonan, & Berzofsky, 2015). Thirty-one percent of veterans in jail were told they had PTSD as compared to 15% of non-veterans (Bronson, Carson, Noonan, & Berzofsky, 2015).

Approximately 50% of OIF/OEF/OND veterans seeking treatment screened positive for PTSD. Exposure to combat was the most consistent factor among those suffering from PTSD, though this alone was not enough for a PTSD diagnosis(Sippel, Roy, Southwik, & Fichtenholtz, 2016). Dursa, Reinhard, & Schneiderman (2014), conducted a study using data obtained from National Health Study for a New Generation of U.S. Veterans. Data included veterans seeking treatment both in and outside the VA and service members

who were both deployed and not deployed. It was found that 13.5% of the 20,500 participants screened positive for PTSD. The prevalence was also higher among OIF/OEF veterans with combat exposure than those without. Deployed men were also more likely than deployed women to be diagnosed with PTSD, likely due to the fact that women were not allowed in combat roles until January 2013. Even though women may not have been exposed to combat as often as men, they were more susceptible to military sexual trauma (Dursa, Reinhard, & Schneiderman, 2014).

There is a difference between screening positive for PTSD and being diagnosed with PTSD. Screening positive shows that one is likely to have the disorder, but diagnosis is necessary in order to be treated for the disorder. According to an article *“Committee on the Assessment”* (2012), between August 2010 and July 2011, 8.3% of active duty service members who completed the post-deployment health assessment (PDHA) screened positive for PTSD. Once an individual screen positive for PTSD under the VA’s care, they are referred to receive a mental health evaluation by a professional within 24 hours, then a full evaluation within two weeks of the initial referral. There is very little to no research on follow-ups after referrals (“Committee on the Assessment”, 2012). Post-deployment screening immediately following one’s deployment may be underrepresented in samples in comparison to those screened at a later time.

Ninety percent of mental health diagnose are received during primary care treatment or visits, therefore it is vital for PTSD screening to exist in primary care settings. The Department of Defense and the VA have integrated mental health screenings into their preventative health assessment. However, there are challenges to screening in primary care, some such as officials not having experience working with patients who have PTSD(“Committee on the Assessment”,2012).

Causes/Risk Factors. Understanding and knowing the risk factors for PTSD among combat veterans is important since there is an increased likelihood of other comorbid disorders and negative consequences (Shea, Reddy, Tyrka, & Sevin, 2013). It is important to note that risk factors differ between members of the military and civilians. Significant factors that predict PTSD among National Guard/Reserve (NGR) military personnel include amount of combat exposure, family concerns while deployed, and low social support post-deployment(Shea et al., 2013). Multiple deployments can also increase one’s likelihood of developing PTSD; those with two deployments were 60% more likely to develop PTSD compared to those with just one deployment (Creamer, Wade, Fletcher & Forbes, 2011).

One common theme among psychiatric disorders, including PTSD is emotional dysregulation (Miles, Menefee, Wanner, Tharp, & Kent, 2016). Emotional regulation is the neurological response

that allows one to adapt to the environment by responding to an environmental stimulus or internal thoughts (Miles, 2016). Emotional regulation is an important process, especially when experiencing intense emotions relating to PTSD (Sippel et al., 2016). Emotional regulation skills may alleviate the risk for PTSD and could be considered an early intervention technique or treatment objective. Those diagnosed with PTSD tend to suppress their emotions, which decreases the distress related to the symptoms, but only in the short term(Sippel et al., 2016).

Prevalence of PTSD among Veterans. The lifetime prevalence of PTSD appears to be slightly lower (12%) for Iraq and Afghanistan War-era veterans than Vietnam War-era veterans, suggesting that receiving assistance with regards to PTSD or other mental health illnesses is effective if done at the onset of symptoms or even at all (Miller, 2015). Vietnam War veterans were less likely to receive treatment for PTSD-related symptoms.

Those who reported experiencing fear or helplessness in response to combat-related event had more PTSD symptoms than those who did not (Adler & Hoge, 2008). There are also higher rates of all mental health issues among veterans than among active duty personnel, possibly due to transitions, loss of identity, and disintegration of the social support in the military network (Sparrow et al., 2017). Experiencing fear or helplessness could lead to violence at home.

THE RELATIONSHIP BETWEEN PTSD AND CRIMINAL BEHAVIOR

Prevalence of criminal behavior among military veterans. The elements among veterans seeking mental health treatment from the VA has revealed conflicting reports on prevalence of substance abuse, violence, and PTSD (Buchholz et al., 2017). Stress and vulnerability appear to increase the association between veterans and violent behavior (Elbogen et al., 2014). PTSD is linked to higher prevalence of violence among veterans. It is also reported that they have higher rates of physical aggression against their partner in the past year as opposed to veterans not diagnosed with PTSD (Buchholz et al., 2017). Buchholz et al. (2017), found that 10-50% of patients undergoing mental health treatment for PTSD were also abusing substances. Veterans with PTSD symptoms were more likely to report engaging in physical aggression resulting in injury (Buchholz et al., 2017). Baldwin (2017), reported that percentage of incarcerated veterans has declined in recent years since the increase between the late 80s and late 90s. However, this decline may be due to the decline in veterans among the general population, and the veteran incarceration rate is expected to increase as soldiers continue to return from OIF/OEF/OND. The rate at which veterans are encountering the criminal justice system is alarming (Van Dyke & Orrick, 2017). Thirty-five percent of veterans in prison were incarcerated for a violent sexual offense compared to twenty-

three percent of non-veterans (Bronson, Carson, Noonan, & Berzofsky, 2015). Incarcerated veterans are also more likely than nonveterans to have committed murder, rape, or assault and less likely to have been convicted to robbery or burglary (Miller, 2015). According to the Bureau of Justice Statistics, 64% of veterans were sentenced for violent crimes compared to 54% of non-veterans (Bronson, Carson, Noonan, & Berzofsky, 2015).

It seems that individuals with military PTSD related diagnoses have been found to be less culpable of a crime compared to those without a mental diagnosis or no diagnosis at all (Miller, 2015). They are also more likely to be offered a plea deal or to attend a diversion program. Ten percent of adults who are currently in jail or prison have prior military experience (Blodgett et al., 2015).

Specialized courts, including the Veteran’s Treatment Court (VTC), were created within the criminal justice system to reduce case overload, costs, and the number of repeat offenders (Baldwin, 2017). The goal of the VTC is to divert veterans to mandated treatment and services instead of correctional settings to address their criminal behavior (Baldwin, 2017). Untreated mental issues could result in aggression, violence, and substance abuse, which could lead to law enforcement contact (Baldwin, 2017). Baldwin (2017) supported some previous research

that theft/fraud was the third most reported crime among veterans and non-domestic violent crime was the fourth. There are discrepancies in comparison to previous research, which found more incarcerated veterans committing violence, however this could be due to the different eligibility requirements among each Veteran Treatment Court. According to Hartwell et al. (2014), there was a 46% increase in the number of Veteran Treatment Courts in 2011. Statistical data regarding the success of the courts is limited or not readily available due to their infancy (Erickson, 2016).

A combination of PTSD, combat exposure, and military training can diminish one's culpability when committing a crime or make people less likely to conform to laws (Wortzel & Arciniegas 2010). One study that states that combat zone experience is not statistically significantly correlated with criminal convictions (Teachman & Tedrow, 2016). However, according to Wortzel and Arciniegas (2010), combat exposure can cause one to become desensitized to societal and moral prohibitions. The frequency of combat exposure and the extent is one of the strongest predictors of PTSD in OIF veterans (Green et al., 2016).

Aggression

According Afari et al. (2015), previous research has confirmed that OEF/OIF veterans with greater exposure to combat

displayed more aggression toward others and problems regulating violence upon return to civilian life. In the same study, Afari et al. (2015), considered the different impacts of combat exposure on male and female veterans and revealed that males had higher rates of combat exposure as opposed to females. Even though women were less likely to be exposed to combat, the self-reported levels of PTSD symptoms reported were around the same among men and women. Miles et al. (2016), found that emotional dysregulation fully explains the correlation between PTSD symptoms and impulsive aggression. Veterans with PTSD may have difficulty differentiating between safe and unsafe environments due to their sensitive physiological responses to stimuli related to the trauma (Miles et al., 2016). According to Sreenivasan et al. (2013), battle-mind training can help explain one’s mindset while deployed as opposed to civilian life. For example, while deployed or in combat it is important to be able to make split-second life-or-death decisions, and anger can help in this situation. However, while at home, it would be inappropriate for a service member to be hostile to others and snap over something minor. What is adaptive while in combat may be maladaptive in a civilian setting. MacManus et al. (2012), conducted a study to assess the prevalence violence among UK soldiers returning from deployments in Iraq and Afghanistan. Approximately 12% of the participants reported having been

involved in physical violence with family or someone else post-deployment. Violence was correlated with pre-enlistment anti-social behavior. Those in combat or in combat support role had a 12% prevalence rate (MacManus et al., 2012). Even though this study contained only participants from the UK and this current study is focused solely on U.S. veterans, the information is still relevant because they were deployed during the same time period and dealt with the same circumstances.

Veterans with PTSD have reported more feelings of anger and hostility. Civilian violence has been known to follow military experience since the Civil War (Miller, 2015). Veterans from Vietnam, Iraq, and Afghanistan Wars with PTSD both reported having hyperarousal symptoms and issues controlling anger/aggressive impulses, which could lead to violent behavior (Miller, 2015).

Teten et al. (2010), states that it is important to assess impulsive and premeditated aggression separately. However, past studies have found that anger associated with impulsive aggression, but hostility was associated with premeditated aggression. Those veterans with PTSD reported experiencing persistent ongoing anger issues that would escalate quickly (Worthen & Ahern 2014). The anger that was experienced would affect every aspect of their lives and every person close to them, including family, friends, and coworkers.

Theories

Several different theoretical perspectives could explain veterans' criminal behavior. The first is the Violent Veteran Model. This model states that soldiers who have combat exposure are more accepting of violence and more skilled at it, making them predisposed to criminal behavior and PTSD symptoms (Van Dyke & Orrick, 2017). These military personnel are given intense and extensive training on use of force in life-or-death situations. While in combat, they are in survival mode, which may be difficult to unlearn or turn "off" once they return home (Van Dyke & Orrick, 2017). They are trained to be able to survive harsh conditions and threatening or violent environments (Hafmeister & Stockey, 2010). They are also taught to attack enemies without hesitation and to suppress the "flight" trait in normal human behavior in order to be able to take one's life in certain circumstances to accomplish the military's objective (Hafmeister & Stockey, 2010). Soldiers are also trained to effectively engage in hand-to-hand combat and to use deadly firearms if needed, which can spill over once they return from deployment.

Another perspective used to examine the relationship between veterans and crime is the Life Course Perspective, which looks at events over an individual's life to examine trends and trajectories (Van Dyke & Orrick, 2017). Marriage, divorce,

military service, or unemployment are all events that could change one's life trajectory (Teachman & Tedrow, 2016). Applying this theory to this study, the military has been viewed as a turning point that could steer one away from the life of crime for criminals and non-criminals. On the other hand, is was also discovered military service members with prior criminal justice contact were less likely to be charged and convicted of non-violent cases (Teachman & Tedrow, 2016). This suggests that time in the military was seen as a positive life event that taught discipline. It was also found that those who committed crimes while in the military and received dishonorable discharge were likely to continue or even increase offending post military service (Van Dyke & Orrick, 2017).

Agnew's General Strain Theory is also used to help explain veterans' criminal behavior in that those who have been previously exposed to trauma are at an increased risk for antisocial behavior (Elbogen et al., 2012). Specifically, there is a correlation between the intrusion symptom of PTSD, associated with emotional distress, emotional dysregulation, and antisocial behavior (Bennett, Morris, Sexton, Bonar, & Chermack, 2017).

Greenberg & Rosenheck (2011), examined veterans and non-veterans who were incarcerated and found that veterans were somewhat more likely than non-veterans to commit violent crimes

such as murder (12% vs. 9%) (as cited in Van Dyke & Orrick, 2017).Van Dyke and Orrick (2017), more recently conducted a study by analyzing the incarcerated population and the effect military experience had on one's likelihood to engaging in violent, property-related, or drug-related crimes. They found that veterans were more likely than non-veterans to commit crimes, explained by the Violent Veteran Model. Van Dyke and Orrick (2017), also compared veterans with non-combat exposure to those with combat exposure and found conflicting results. Combat veterans were less likely than non-combat veterans to commit a violent offense and more likely to engage in a drug offense, suggesting that those individuals cope with their combat experiences by using illegal substance. Van Dyke and Orrick's (2017), findings were also supported with the life course perspective in that military service can act as a negative or positive turning point. Military training is assumed to provide one with discipline, authority, and character and the ability to adapt to any situations. However, on the same token, it can be dehumanizing, which could leave or create psychological scars (Logan, & Pare, 2017). These scars and experience could lead to negative outcomes (Logan, & Pare, 2017).

The Diathesis Stress Model explains how one's genetic predisposition and life stressors could lead to emotional

derailment, which could lead to committing a serious or violent crime (Sreenivasan et al., 2013). In regard to veterans, one's internal controls may deteriorate due to combat exposure or injury in addition to civilian life stressors. This could lead to violence (Sreenivasan et al., 2013). This model usually focuses on factors within an individual, however interpersonal and situational variables such as lack of social support can also be considered (Shea et al., 2013).

Hobfoll's Conservation of Resources (COR) Theory posits that one's resources are used to cope with threats, which results in added stress and reduction of resources (Shea et al., 2013). These resources could include marriage, employment, friendship, time, and money. The loss of such resources can lead to adverse outcomes, such has PTSD or depression (Vogt et al., 2011).

Co-Occurrence

Historically, veterans have been more at risk for alcohol and substance abuse disorders dating back to the Civil War when soldiers became addicted to morphine. More recently, 40% of OIF/OEF veterans have alcohol abuse-related issues (Baldwin, 2017). It is also reported that 40% of combat veterans with PTSD have comorbid issues, such as depression and suicidality (Miller, 2015). Mental health issues may worsen a veteran's susceptibility to alcohol or substance abuse, as they might be

inclined to use alcohol and substances to cope with the issues they’re dealing with. According to Jakupak et al., 2010 (as cited in Baldwin, 2017), OIF/OEF veterans with PTSD or depression are twice as likely to abuse alcohol compared to those without the disorder.

Treatment

Veterans have a difficult time re-adjusting life post-deployment. According to a national sample of Iraq and Afghanistan War veterans, 25% of the population who was diagnosed with PTSD or depression only receive the minimal amount of therapy needed during the first year of post-deployment, which is 8 visits in a 14-week span (Smith et al., 2017). Even though there is an increasing number of veterans being diagnosed with mental health issues, there is evidence that OEF/OIF veterans are underutilizing the mental health services offered by the Department of Veterans Affairs (Garcia et al., 2014). These veterans also appear to be dropping out before their treatment is complete and missing appointments. This may be because younger veterans have more demands in their life, including work and family, and may feel negatively about treatment or want to handle the issues on their own. Smith et al.(2017), evaluated veterans’ first episode of care after being diagnosed with PTSD and revealed that those who experienced more symptoms of re-experiencing criteria of the diagnosis and

numbing had a greater likelihood of receiving psychotherapy treatment. Specific screening and assessment is needed to better assist veterans who may be suffering from mental health issues involved in the criminal justice system. The VA has created two programs whose goal is to conduct outreach among veterans involved in the criminal justice system and to connect them to the appropriate mental and physical health community services (Blodgett et al., 2015). Health Care for Reentry Veterans, assists those veterans in the prison system, and Veterans Justice Outreach, assists those in the local jails and courts (Blodgett et al., 2015). These programs were put into place to prevent and end veteran's' cycles of being involved in the criminal justice system involvement and, homelessness and to improve social and clinical results. They even conduct assessments on a veteran's biopsychosocial profile, identifying substance abuse issues and other psychiatric conditions. The challenge is ensuring that those veterans who need assistance receive the treatment. The effect sizes of treatments among veterans is low, possibly due to military training, which creates an attitude or lifestyle that is not consistent with seeking help when needed (Creamer et al., 2011).

Reasons to Study

It could be useful to record one's PTSD symptoms during the screening period to help determine the best treatment needs for

the veteran and whether they are likely to follow up with treatment (Smith et al., 2017). It is important to study the high rates of PTSD among veterans because it affects one's quality of life and possible link with crime(Sippel et al., 2016). According to Ghaffarzadegan, Ebrahimvandi, and Jalali (2016), policy research on PTSD is undeveloped and must engage all parties involved, including the patient, their family and friends, the community, the military, and the VA. Focusing on just one entity could shift the burden and making it difficult to find the root of the problem.

Limitations

The Department of Defense (DOD) has pushed for new strategies to prevent violence carried out by those with military service (Elbogen et al., 2014). It was not until after the Fort Hood mass shooting, in which a U.S. Army major and psychiatrist opened fire at the Fort Hood military base in Texas, killing 13 and injuring more the 30, that the DOD agreed that applying different psychosocial factors to treatment is important. Treatment could incorporate vocational skills, social networks, and violence reduction skills(Elbogen et al., 2014). Elbogen also stated that modifying one's protective factors could lessen violence among veterans Elbogen et al.(2014), further revealed that those with higher risk group, protective factors were associated with decrease of violence.

Some limitations when studying samples of veterans is that they are usually convenience samples of those already involved in the VA mental health care system as opposed to individuals who need treatment and do not seek it. This could create some studies that either over-represent or under-represent the actual number of those with PTSD (Vaughan, Schell, Tanielian, Jaycox, & Marshall, 2014). To start combating this underrepresentation, Vaughan et al. (2014), conducted random sample study among VA service-eligible veterans as opposed to those who were already receiving health care from the VA. This study was an online and telephone survey that used the PTSD Checklist (PCL) symptom scale and an additional health questionnaire to assesses for major depression. It was found that 16% of participants had probable PTSD (Vaughan et al., 2014). More research would be needed to recognize barriers veterans face to receiving care.

Another challenge when studying the veteran population is veterans' reluctance to state they're veterans due to possible loss of VA benefits. This creates an underestimation of the veteran population (Baldwin, 2017). The criminal justice institution also may not collect data on veteran status and some may not identify as a veteran due to the varying definitions of the term *veteran* (Baldwin, 2017). There are very limited studies on veterans in different VTCs, making it difficult to compare study results.

Chapter 3

METHOD

Participants

This study used de-identified archival data on United States military personnel of all ages and both genders, who have served in OEF/OIF/OND. Participants were either diagnosed with PTSD, screened positive for PTSD, or had probable PTSD symptoms. They were excluded if they suffered from other comorbid issues such as substance abuse, other psychiatric issues, unemployment, and homelessness.

Design

A meta-analysis was conducted to synthesize a systematic review of the studies that assessed the key variables. The effect sizes from the studies included were then abstracted and combined in order to obtain a total estimated effect size. An estimated pooled prevalence was set at 95% confidence interval, employing a random effects model. This model allowed for assessment of heterogeneity across the studies based on I^2 statistics.

Procedure

To locate peer-reviewed articles discussing the prevalence of violence and criminal behavior among military veterans with PTSD, the databases PsychINFO, PILOTS, and OneSearch were used to search studies conducted from January 2007 to December 2017. The following key search terms were used with Boolean operators: incarceration, violence, crime, aggression, PTSD, OR antisocial behavior AND veteran, army, soldiers, armed forces, military AND conflict, war. References from other articles and from the reference lists were checked for more studies. Studies included for the review were quantitative studies that explored criminal behavior and aggression among those currently or formerly serving in Iraq and Afghanistan after 2001. The data regarding participant characteristics, method, and results were extracted and compared to assess the homogeneity of the results.

Data Analysis

A total of seven studies were included in the analysis. The random-effects model was employed to evaluate the heterogeneity between the studies. The majority of the studies used univariate and multivariate logistic regression analyses. The odds ratio (OR), confidence interval (CI), and a set statistical significance of P <.05 were given for each study. I^2 indicates total variance within the effect size that is due to inconsistencies between the studies, an I^2 over 75% indicates a

high level of heterogeneity (Cooper, 2010). The studies used in the analysis are listed in table 1.

In order to obtain the overall I^2, *P* value, and estimated OR, and CI for all the studies, the Open Meta-Analysis program was used. Upon completion of the calculations, a forest plot was then created to provide a graphical display of the results of veterans with PTSD and the association with criminal behavior or aggression.

Chapter 4

RESULTS

Introduction

The hypothesis that military veterans who were exposed to combat in OIF/OEF/OND and diagnosed with PTSD have a higher likelihood of committing crime or displaying aggressive behavior was supported.

Results

Approximately nine studies were reviewed to be included in the meta-analyses; however, only seven were actually included. Two studies were excluded because they contained moderator variables that were not the focus of the study, including age, race, gender, childhood experiences, and individual symptoms of PTSD. The three studies also reported their findings that did not allow the variables to be combined with other studies.

Figure 1 displays a forest plot of the estimated odds ratios for the association between PTSD, combat exposure, and violent behavior. The overall combined estimate among the seven studies was 2.355 (95% CI [1.369, 4.52]) with a high level of heterogeneity (I^2 = 9832%, P < 0.001), indicating a highly significant association supporting the hypothesis.

Booth-Kewley et al.’s (2010), study had the largest impact on the analysis by focusing on combat exposure and deployment-related stressors and the correlation between PTSD symptoms and

antisocial behavior. Those who screened positive for the disorder were eight times more likely to engage in antisocial behavior as opposed to those who did not screen positive (Booth-Kewley et al., 2010). The link is consistent with previous research. Posttraumatic stress symptoms increased one's odds of obtaining a "violent legal charge" or violent offending. The symptoms did not demonstrate an association with non-violent offending (OR = 1.02, 95% CI [1.004,1.03]), even after adjusting for other mediating factors, including age, race, or substance use (Bennett et al., 2017). Tsai et al.(2013), which was also included in the analysis, revealed that OEF/OIF/OND veterans were three times more likely than any other incarcerated veteran to have combat-related PTSD (OR = 3.12, 95% CI[2.46-3.95]).

Elbogen et al. (2012), found that a link between combat exposure and arrest, but only when mediating for PTSD with high irritability (OR = 2.13, 95% CI[1.15-3.95]). Sullivan et al. (2014), whose study was also included in the analysis, revealed that veterans with high combat exposure were at 2.5 times the odds of committing stranger aggression. More importantly, PTSD flashback symptom intensity increased the odds of severe stranger violence (OR = 1.26, 95% CI[1.11- 1.42]). Elbogen et al. (2014)'s study also revealed that PTSD was positively related to other physical aggression (OR = 1.63, 95% CI[.98-2.70]). Severe violence and other physical aggression was

significantly associated with combat exposure, without PTSD symptoms, which shows a direct link with combat exposure and aggression.

Summary

Overall the results were consistent with the hypothesis in that those diagnosed with or who had symptoms of PTSD were more likely to engage in criminal behavior. However, it is important to note the combat exposure can cause the results to vary. For instance, even though Elbogen et al.(2014), found a correlation between PTSD and other physical aggression, severe violence (use of physical force, fear, or a weapon) was not significantly correlated with PTSD alone (OR = 1.03, 95% CI[.39- 2.16]).

Chapter 5

DISCUSSION

Introduction

Anger and aggression are commonly reported among military personnel returning from deployment. This anger and aggression are also tied to other behavioral issues (Wilk et al., 2015). This meta-analysis is one of the few that focuses on PTSD, combat exposure, and violent or aggression leading to criminal behavior.

Impact of PTSD and Combat Exposure on Aggressive or Violent Behavior

It is important to identify and address aggressive factors relating to PTSD in order to create a more effective readjustment to civilian life plan. Wilk et al. (2015), revealed that aggression was more likely to be reported by veterans who screened positive for PTSD and who had a high level of trait anger. Trait anger is one’s likelihood to become angry during a stressful situation (Wilk et al., 2015). Linking the combat exposure variable has proved to be critical in this research area due to its enormous effect on veterans.

Booth-Kewley et al. (2010), reported that those with combat exposure may return from deployment feeling invincible, leading to risk-taking behaviors such as substance abuse, fights, or other antisocial behavior (as cited by Killgore et al., 2008 in

Booth-Kewley et al., 2010). Teten et al. (2010), determined over 70% of veterans with PTSD in the study sample reported having impulsive aggressive behavior, supporting past research regarding the association between anger, hostility, and PTSD. Wilk et al. (2015), recognized other studies (Elbogen et al., 2012; Jakupcak et al. 2007), that showed that the link between combat aggression may be explained by combat-related PTSD. Other studies (Alder et al., 2011; Gallaway et al., 2012) found a direct correlation between combat exposure and aggression.

Jakupcak et al.’s (2007), study also confirmed that greater trait anger and hostility was reported among those who screened positive for PTSD and that combat exposure was positively associated with trait anger. Approximately 25% of those veterans diagnosed with PTSD reported threatening physical violence compared to 10% of non-PTSD veterans. Furthermore, 19% of those with PTSD reported destroying property compared to 6% of non-PTSD participants, and 17% of PTSD participants reported being in a physical fight with someone compared to 4% of those without PTSD (Jakupcak et al., 2007). One study found that of those veterans incarcerated, 38% committed a violent offense, 25% committed a property offense, 21% committed drug-related offenses, 17% committed public order offenses, and 20% violated probation/parole or committed other miscellaneous crimes (Tsai et al., 2013). Even though these findings were supportive of the

hypothesis overall, OEF/OIF/OND veterans were at a lower risk of being incarcerated in comparison to other veterans (Tsai et al., 2013). This could partly be attributed to the increased level of support from the VA with current veterans than with Vietnam veterans.

Bennett et al. (2017), study results, suggest that severe intrusion symptoms put a veteran at an increased risk for committing a violent criminal offense or that violent offending is correlated with intrusion symptoms. However, it is important to know a diagnosis of PTSD alone does not suggest violent behavior; other factors should be examined. Elbogen et al.'s (2012), results were indicative of high irritability and PTSD increasing the likelihood of criminal behavior, which also supports the hypothesis. It was noted that intervention programs should target symptoms of anger or irritability to reduce recidivism.

Limitations

There were several limitations to this analysis. First, it did not include meditating factors such has alcohol abuse, depression symptoms, or suicidality. This analysis was unable to cover a large portion of criminal behavior among veterans due to the lack of new research. Even though there are other countries such as the United Kingdom whose veterans may suffer from the same difficulties, they were not included in this analysis.

United Kingdom armed forces are usually recruited from socially disadvantaged communities with lower educational attainment (MacManus et al.,2011). Therefore, their behavior could be attributed to pre-military antisocial behavior.

Future Research

It is noted that aggression is related to interpersonal or social problems. Specifically targeting anger and aggression could overall improve a veteran’s functioning and negative adversities (Wilk et al., 2015). An assessment or instrument that assess anger or aggression should be implemented in post-deployment screenings of veterans, especially those who screen positive for PTSD, in order to provide adequate treatment (Wilk et al., 2015). More research is needed on criminal behavior among those veterans diagnosed with PTSD. Future research is needed to assess the outcomes of mental health outreach services provided to veterans released from incarceration to ensure they are effective and reduce recidivism rates among veterans (Tsai et al., 2013).

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APPENDIX A

Author	N	Population	Exposure	Types of Violence	Findings
Angkaw et al., 2013	72	Registered for care with VA San Diego Health Care System	Combat exposure, screened positive for PTSD	Verbal, physical aggression toward self, physical aggression toward objects, Physical aggression toward others	Pearson bivariate correlation **PTSD Symptoms:** *M* =65.89/SD= 26.36 **Verbal aggression:** *M*=10.06/ SD= 9.66 **Physical aggression toward self:** *M*= 3.27/SD= 8.00 **Physical aggression toward objects:** *M*= 6.96/SD= 10.80 **Physical aggression toward others:** *M*= 4.50/SD = 10.81 PTSD symptoms significantly predicted verbal aggression (*b*= 0.44, *SE* = 0.04, *t* = 3.98, *p*< 0.001). PTSD symptoms did not significantly predict physical aggression toward self (*b* = 0.04, *SE* = 0.04, *t* = 1.05, *p*= 0.296). PTSD symptoms significantly predicted physical aggression toward objects (*b*= 0.18, *SE* = 0.04, *t*= 4.11, *p* < 0.001). PTSD symptoms significantly predicted physical aggression toward others (*b*= 0.11, *SE* = 0.05, *t* = 2.33, *p* = 0.023)
Bennett et al., 2017	697	Midwestern Veterans Healthcare System (VHS) and an associated VHS community based outpatient clinic	combat exposure, PTSD	Violent - robbery, assault, rape, and homicide/manslaughter Non-violent- shoplifting/vandalism, parole/probation violation, forgery, weapon charges,	Total PTS symptoms significantly predicted violent offending above and beyond the covariates. The association of PTS symptoms are unique to violent offending and did not extend to non-violent offending (p= .36) **Violent offending** *B*(beta)-.02

				burglary/larceny, prostitution, and contempt of court.	(p<.01); *SE* (Standard Error)- .01 *OR* (Odds Ratio)- 1.02; 95% *CI*- (1.004,1.03) **Non-violent offending** *B*-.01; *SE*- .01; *OR*- 1.01, *95% CI*- (1.00, 1.02)
Booth-Kewley et al., 2010	1,543	Enlisted Marines who completed at least one war zone deployment in Iraq and Afghanistan	Combat exposure, PTSD symptoms, deployment-related stressors	Antisocial behavior	**Univariate analysis**- PTSD was the variable with the strongest association with antisocial behavior. Screening positive for PTSD were over eight times as likely to engage in antisocial behavior as those who did not screen positive (OR= 8.48; 95% CI, 6.-06-11.87). **Multivariate w/ PTSD as predictor-** Screening positive for PTSD had a stronger association with antisocial behavior than any other predictor variable; screening positive for PTSD were over six times more likely to engage in antisocial behavior as those screen negative (OR = 6.29; 95% CI, 4.34-9.12).
Elbogen et al., 2012	1,102	Veterans who served on or after September 11,2011 from the U.S. Department of Veterans Affairs Environmental Epidemiological Service (EES)	Probable PTSD with low irritability, Probable PTSD with high irritability, Combat exposure	Criminal Arrests, Low irritability, high irritability	[bivariate chi-square analyses] Veterans with PTSD reporting concurrent ager/irritability were more likely to be arrested. **Probable PTSD with low irritability - Arrested** Yes-13.36%/ X2- 2.42/*p* .1194 No- 8.2% **Probable PTSD with high irritability – Arrested** Yes 22.76% /x2 -32.01/ *p* <.0001 No: 7.30% **High combat exposure- Arrested**

					Yes: 12.22% x2 16.06 *p* <.0001 No: 5.28% **History of previous arrests-Arrested** Yes: 23.05% x2 36.23 *p* <.0001 No: 7.11% Multivariate analysis w/logistic regression **High combat exposure w/post deployment criminal arrest** *OR*- 1.24, 95% CI (0.72, 2.11) *p* .4372 **Probable PTSD w/ low irritability** *OR*- 1.30 CI (0.62, 2.72) *p* .4947 **Probable PTSD w/high irritability** *OR*- 2.13 CI (1.15, 3.95) *p* .0167 Combat exposure was significantly associated with arrest in bivariate analyses but failed to achieve significance in the multi- variate protocol; post hoc analyses indicated the link between combat exposure and arrest was mediated by PTSD with high irritability.
Sullivan et al., 2014	866	U.S. separated veterans who served on or after September 11, 2001 by the VA Environmental Epidemiological Service (ESS)	High combat exposure, history of arrest, Probable PTSD, PTSD symptoms	Family Aggression, Severe family violence, stranger aggression, severe stranger violence	*Spearman correlation* **High combat** & corr. w/ family aggression *r*- .13 *p* <.0001 …..Severe family violence *r*-.09 ….*p* - .002 …Stranger aggression *r*- .19 …*p* - < .0001 ….Severe stranger violence *r*- .14. *p* < .0001 **History of arrest** not significant with family

					aggression and severe family violence. …..Stranger aggression (*r*- .14 …*p* < .0001 ……Severe Stranger violence *r*- .14. *p* < .0001 **PTSD** & corr. w/ Family Aggression *r*- .20 ….*p* < .0001 …….Severe family violence *r*- .18 *p* < .0001 ……..Stranger aggression *r*- .14 *p* < .0001 …….Severe stranger violence *r* - .15 *p* < .0001 *Logistic regression* Veterans with high combat exposure had about 2.5 times more odds of committing stranger aggression, OR 2.47, CI [1.39, 4.37], *p* .002. High combat exposure had 2.58 times the odds of being severely violent toward a stranger, OR 2.58, CI [1.14, 5.85], *p* .0234. The largest effect of high combat exposure was found in severe family aggression, increasing the odds of being severely violent by almost four times, OR 3.96, CI [1.30, 12.02], *p* .0153. Anger symptom intensity increased the odds of both family aggression and severe family violence, OR 1.28, CI

					[1.19, 1.37], *p* .0001; OR 1.30, CI [1.13, 1.48], *p* .0001. PTSD flashback symptom intensity increased the odds of both stranger aggression and severe stranger violence, OR 1.16, CI [1.05, 1.28], *p* .0029; OR 1.26, CI [1.11, 1.42], *p* .0001, respectively.
Jakupcak et al., 2007	177	Deployment Health Clinic	Combat exposure, PTSD	Anger, hostility, aggression	Combat exposure was significantly positively associated with trait anger, *r* =.20, *p* <.05, and hostility, *r* =.18, *p* < .05, but was not significantly related to aggression, *r* = .14, *ns*. *ANCOVA* planned *t*-test analyses indicated that the PTSD-group reported significantly greater hostility (*M* = 2.4, *SD* = .9) than both the subthreshold-PTSD group (*M* = 1.6, *SD* = 1), *t* (66) = 3.24, *p* < .01, and the non-PTSD group (*M*=.07,*SD*=.07),*t*(94)=10.34,*p*<.01 The subthreshold-PTSD group reported significantly greater hostility than the non-PTSD group, *t* (68) = 4.61, *p* < .01. *binomial logistic regression predicting aggression* Veterans in the PTSD-group were more likely than the veterans in

					the non-PTSD group to have reported aggression (Wald- 8.81, DF= 1; Exp(b)= 4.17; 95% CI= 1.6-10.7) *p* < .01 Veterans in the subthreshold-PTSD group were also more likely than the veterans in the non-PTSD group to have reported aggression (Wald- 7.12; DF=1; Exp(b)= 4.89; 95% CI= 1.5-15.7) *p* < .01. There was no significant difference in aggression comparing the PTSD and subthreshold-PTSD groups (Wald < 1; DF=1; Exp(b)= 1.17; 95% CI= 1.5-15.7)
Gallaway et al., 2012	6,128	USA Army soldiers from two large units	Combat intensity and PTS	Minor and severe aggression	*Multivariate linear regression [Exponentiated regression coefficient= effect size or OR]* Association between **minor aggression** and **combat intensity** (**Low**: regression coefficient estimate *(b)*= -.04; exponentiated regression coefficient (exp(b))= .96; SE= .06; *P* = .44) (**Moderate**: *(b)*= .17; (exp(b))= 1.18; SE= .06; *P*= <.01) (**High**: *(b)*= .48; (exp(b))= 1.62; SE= .07; *P* <.01) **PTS** [*(b)*= .31; (exp(b))= 1.36; SE= .07; *P* <.01] Association between **severe aggression** and **combat intensity**

					(**Low**: *(b)*= -.14; (exp(b))= .87; SE=.05; *P* <.01) (**Moderate**: *(b)*= .01; (exp(b))= 1.01; SE= .06; *P*= .89) (**High**: *(b)*= *.42;* (exp(b))= 1.52; SE= .07; *P* < .01) **PTS** [*(b)*= .27; (exp(b))= 1.31; SE= .07; *P* <.01]
Elbogen et al., 2014	1,388	National sample from Department of Veteran Affairs served after Sept. 11 in OIF/OEF (active duty or reserves)	Combat exposure and PSTD	Severe violence (Physical force or fear, use of a weapon, etc.) and other physical aggression (less lethal/serious physically aggressive acts: kicking, slapping, using fists) in the past year	*Multiple logic regression* Severe violence (OR=1.03; 95% CI=.39-2.16; *P*= 0.8249) was not significant with PTSD only. Severe violence (OR= 1.03; 95% CI= 1.01- 1.05; *P*= 0.0066) and other physical aggression (OR=1.04, 95% CI= 1.02-1.05; *P*= < 0.0001)was significant with combat exposure. PTSD was positively related to other physical aggression (OR=1.63; 95% CI= 0.98-2.70; *P*= 0.0583).
Tsai et al., 2013	1,201	OIF/OEF/OND from Health Care for Reentry Veterans	Combat exposure, combat-related PTSD, and incarceration	Criminal history: Violent, property offense, drug offenses, public order offenses, probation or parole violation, or other unspecified offenses	Incarcerated OEF/OIF/OND veterans were three times more likely than other incarcerated veterans to have combat-related PTSD. *B*= 1.14; SE= .12; OR= 3.12; 95% CI= 2.46-3.95; p <.001 37.5% of OEF/OIF/OND veterans were incarcerated for violent offenses; 25.2% for property offenses; 21.7% for drug offenses; 17.1% for public order offenses; and 20.4% for probation/parole violation.

Chart 1. Summary of results from studies used in the analysis

APPENDIX B

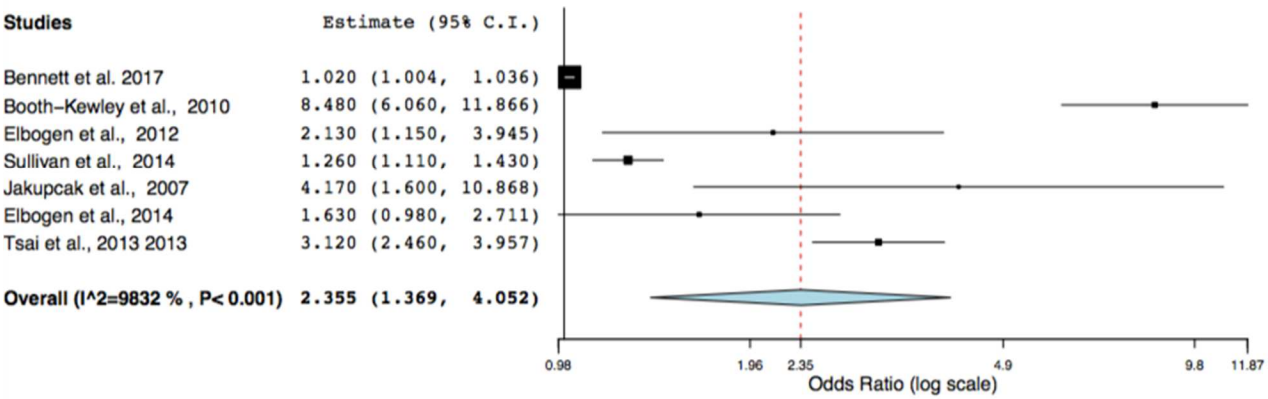

Figure 1. Forest plot of studies