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Suicide Risk in Homeless Veterans with Traumatic Brain Injury

Abstract

ABSTRACT

SUICIDE RISK IN HOMELESS VETERANS WITH
TRAUMATIC BRAIN INJURY

Dr. Briana Lafferty

Dr. Marilyn Sommers

Every sixty-five minutes a veteran takes his or her own life. Suicide is now the second leading cause of death among United States (US) military service members, with rates almost three times that of the general population. An association may exist between suicide and traumatic brain injury (TBI). One in six military service members involved in the wars in Iraq and Afghanistan are said to have been subjected to at least one TBI. With the growing number of service members exposed to blast injuries, the consequences of TBI, such as changes in mood, personality, cognition, and behavior, expose them to the risk of suicide. Veterans are also 50% more likely than other Americans to become homeless, and homelessness is another problem contributing to a greater risk for suicide in this population. Rates of suicide among individuals experiencing homelessness are reported to be approximately ten times higher than the annual percentage of suicides within the housed population. Currently, there is no existing literature that examines suicide risk in veterans affected by both TBI and homelessness. The aim of my study was to examine the associations among suicide risk and specific physical, psychological, social, and military factors, as well as to describe the association of suicide risk and utilization of Veterans Affairs (VA) healthcare services, in a sample of homeless US Veterans who have experienced at least one TBI. I conducted a cross-sectional study using secondary data from the National Center for Homelessness Among Veterans, in addition to performing retrospective chart reviews. My findings demonstrated strong associations between high risk for suicide and marital status, PTSD, issues with memory/problem solving, seizures, and inpatient admissions for mental health treatment. My findings have implications for health care and policy change related to decreasing stigmatization of mental health issues, overcoming barriers and increasing eligibility to VA healthcare benefits, and mandating more aggressive screening and prevention efforts. These changes are needed particularly during the transition to civilian life.

Degree Type

Dissertation

Degree Name

Doctor of Philosophy (PhD)

Graduate Group

Nursing

First Advisor

Marilynn Sommers

Subject Categories
Nursing

SUICIDE RISK IN HOMELESS VETERANS WITH TRAUMATIC BRAIN INJURY

Briana Lafferty

A DISSERTATION

in

Nursing

Presented to the Faculties of the University of Pennsylvania

in

Partial Fulfillment of the Requirements for the

Degree of Doctor of Philosophy

2014

Supervisor of Dissertation

Dr. Marilyn Sommers, PhD, RN, FAAN
Lillian S. Brunner Professor of Medical Surgical Nursing
Director of Center for Global Women's Health

Graduate Group Chairperson

Dr. Connie Ulrich, PhD, RN, FAAN
Associate Professor of Nursing
Associate Professor of Bioethics, Department of Medical Ethics, School of Medicine
Chair, Graduate Group in Nursing

Dissertation Committee

Dr. Jamison Fargo, PhD. Associate Professor at Utah State University
Dr. Nancy Hanrahan, PhD, RN, CS, FAAN Associate Professor at the University of
Pennsylvania School of Nursing
Dr. Ann Elizabeth Montgomery, PhD Associate Researcher at the National Center on
Homelessness Among Veterans

Dedication page

I would like to dedicate this work to Ricky Palladino, my best friend, whom none of this would have been possible without. You've held my hand through this entire process. At times when I felt I wanted to give up, you gave me the motivating words I needed to continue. I love you.

I would also like to dedicate this to Carolyn Peluso. Your friendship and support have influenced me in ways that you will never know. You will always be loved and never forgotten.

ACKNOWLEDGMENTS

First of all I thank you God, for life, health, and the energy that you have given me to reach my professional goals.

To my dissertation committee, my sincere thanks for sharing your knowledge and offering your expertise to my research. *To the chair of my committee, Dr. Lynn Sommers*, thank you for your guidance over these past few years. I would have never been accepted into this program without you, and I would've never made it this far either. I will never forget your support and patience. *To Dr. Ann Elizabeth Montgomery*, thank you for opening the doors of your office in such an accommodating and generous way, and for allowing me to work with such a great set of data.

To Lisa Quinn and Justine Sefcik, I would not have made it through without the two of you. I will be forever grateful to you both for always lending an ear to my frustrations, and for all of the help you both have given me over the past four years. Thank you.

To Ricardo, thank you so much for the ear plugs. Those ear plugs kept me sane and focused during the long hours of writing.... and they probably saved the life of a few loud college students over the years too 😊

To Shagadoon and Butch, this is what can be accomplished after years of telling people to watch their "TONE", ha ha. Thank you for helping me get to where I am today, for letting me cry when I needed to cry, for always supporting me, and for putting up with my moods related to school for all these years, I couldn't have done it without you guys I bet you're glad it's finally over!

To Big Ed and Kathy, thank you for always showing interest in my endeavors over the years, and for always making me feel like I made you proud. Thanks for always believing in me. I wouldn't be where I am today without that support and love.

To Lori, I would've lost my mind staring at my computer for hours on end without your email interruptions. Thank you for listening to me talk about school for all of these years, and for always acting like you were interested. I'm extremely lucky to have a friend who I can share my accomplishments with, and who I feel is truly happy for me. Thank you for that.

To Joanne, I can't believe I have a PhD now, when I barely survived those years at West Chester. That was such a tough time in my life, and there's no way I would've gotten through it without your friendship. I wouldn't be where I am today without you. You've been there for me during every stressful part of my life for over twenty years. Thank you for always being there.

To Christina, I wouldn't have made it through this program without all of those long phone conversations that allowed me to vent out my frustrations. Thank you for always understanding my work commitments over the years, and for not making me feel guilty for it. And thank you for always being there for me when I needed you. I wouldn't have survived this program without your friendship.

To the rest of my family and friends, there are too many of you to mention here, I don't know where I would be without each and every one of you. I'm very blessed to be surrounded with such a great support system.

ABSTRACT

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Every sixty-five minutes a veteran takes his or her own life. Suicide is now the second leading cause of death among United States (US) military service members, with rates almost three times that of the general population. An association may exist between suicide and traumatic brain injury (TBI). One in six military service members involved in the wars in Iraq and Afghanistan are said to have been subjected to at least one TBI. With the growing number of service members exposed to blast injuries, the consequences of TBI, such as changes in mood, personality, cognition, and behavior, expose them to the risk of suicide. Veterans are also 50% more likely than other Americans to become homeless, and homelessness is another problem contributing to a greater risk for suicide in this population. Rates of suicide among individuals experiencing homelessness are reported to be approximately ten times higher than the annual percentage of suicides within the housed population. Currently, there is no existing literature that examines suicide risk in veterans affected by both TBI and homelessness. The aim of my study was to examine the associations among suicide risk and specific physical, psychological, social, and military factors, as well as to describe the association of suicide risk and utilization of Veterans Affairs (VA) healthcare services, in a sample of homeless US Veterans who have experienced at least one TBI. I conducted a cross-sectional study using secondary data from the National Center for Homelessness Among Veterans, in addition to performing retrospective chart reviews. My findings demonstrated strong

associations between high risk for suicide and marital status, PTSD, issues with memory/problem solving, seizures, and inpatient admissions for mental health treatment. My findings have implications for health care and policy change related to decreasing stigmatization of mental health issues, overcoming barriers and increasing eligibility to VA healthcare benefits, and mandating more aggressive screening and prevention efforts. These changes are needed particularly during the transition to civilian life.

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CHAPTER ONE

Introduction

Suicide risk within the United States (US) is a national priority. Every 13.7 minutes someone in the US dies by suicide (American Foundation for Suicide Prevention [AFSP], 2013). Suicide is the fourth leading cause of death in the US for adults between the ages of 18 and 65 years (AFSP, 2013), with each year nearly 1,000,000 people attempting suicide (Hawton & van Heeringen, 2009) and approximately 12.4 suicide deaths per 100,000 people (Centers for Disease Control and Prevention [CDC], 2012). Suicide is defined by the Centers for Disease Control and Prevention (CDC) as “death caused by self-directed injurious behavior with any intent to die as a result of the behavior (CDC, 2013).” Although much of the current literature focuses on individuals who have completed suicide, suicide risk is clinically important because it is the prelude to all successful suicide attempts (Rice & Sher, 2012). I am defining suicide risk as feelings of hopelessness, thoughts of being better off dead, thoughts of hurting oneself, thoughts/plans about suicide, or history of a suicide attempt, reflecting the questions in the MINI International Neuropsychiatric Interview (MINI) used to assess risk for suicide (Sheehan et al. 1998).

Risk of suicide within the veteran population is a significant health issue. In 2013, 22 veterans committed suicide per day (Zoroya, 2013), which is up from the rates of 18 veterans per day from the year prior (Clifton, 2013; Doa, 2013). Among the 22 million veterans in the US in 2013, suicide rates were 36 per 100,000 veterans (Zoroya, 2013), which is almost three times the rate of suicide in the general population (CDC, 2012). During the war in Afghanistan, more military fatalities have been attributed to suicide

than to combat (Thompson & Gibbs, 2012). Male veterans are twice as likely as non-veteran civilians to die by suicide (Kaplan, M. S., Huguet, N., McFarland, B., & Newsom, J., 2007). US female veterans have three times the risk of female civilians (American Psychiatric Association [APA], 2004).

Data from several investigators have demonstrated an association between suicide and traumatic brain injury (TBI) (Teasdale & Engberg, 2001). TBI is a type of acquired brain injury that occurs as a result of a blow, jolt, or bump to the head, or a penetrating injury that disrupts brain function (CDC, 2010). Depending on the severity of the injury and its symptoms, TBI is labeled as mild, moderate, or severe (Granacher, 2008). The process by which TBI can lead to suicide involves the damage of neuropathways within the brain that can lead to changes in certain cognitive, emotional, and behavioral processes (Granacher, 2008), which put these individuals at an increased risk for suicide (Brenner, Ignacio & Blow, 2011). These changes include, but are not limited to risk taking, apathy, aggression, impaired problem solving, and poor judgment (Granacher, 2008).

TBI has affected one in six US military service members during the wars in Iraq and Afghanistan (Savage, 2009). US service members who were deployed to combat zones sustained almost daily exposure to blasts from explosions, bombs, grenades, and land mines. Greater than 60% of blast injuries are said to result in a TBI (Cifu, Cohen, Lew, Jaffee & Sigford, 2010). As of March 2009, Pentagon officials reported that 360,000 service members who returned from Iraq and Afghanistan had suffered a TBI (Zoroya, 2009). However, these numbers are most likely underreported, and have also increased drastically over the past four years, as improvements in protective combat

armor and advances in the medical field have occurred, making previously deadly injuries more survivable (Quinlan, Guaron, Deschere & Stephens, 2010). Although TBI is commonly linked to deployment, many of these injuries occur during times other than during military service. For instance, some service members are subjected to as many as 12 or more explosions per day during training exercises (Kelley, Athy, Vasbinder, Chiamonte & Rath, 2010).

Much of the literature surrounding the association between suicide and TBI focuses on “chronic traumatic encephalopathy” (CTE). CTE is a progressive neurodegenerative disease resulting from multiple TBIs, referred to as repeated traumatic brain injury (rTBI), that results in damage to the cerebral axons from acceleration and deceleration of the head upon impact (Goldstein et al., 2012). Symptoms of CTE can include impaired judgment and impulse control, memory loss, confusion, aggression and depression (Baugh et al., 2012). National attention has been focused on CTE because of sports-related rTBI followed by attempted or completed suicide by athletes (Baugh et al., 2012). Investigators are now suggesting that CTE neuropathology in the brains of athletes with TBI is similar to that of veterans with TBI (Goldstein et al., 2012).

Suicide rates in veterans continue to rise (Starr, 2013). Suicide risk is not only a critical issue to study broadly within the veteran population, as well as veterans with TBI, but it is also important to investigate this risk in veterans who are also homeless. As of 2012, 13% of the adult homeless population was composed of veterans (Departments of Housing and Urban Development [HUD], 2012). Goldstein, Luther and Haas (2012) interviewed a group of 3,595 homeless veterans and found that 482 had suicide ideation,

and 149 had attempted suicide within the previous 30 days. To date, there is no existing literature that examines suicide risk in veterans affected by both TBI and homelessness.

With thousands of veterans involved in the recent wars in Iraq and Afghanistan, it is critical to understand the risk factors for suicide among homeless veterans with a history of TBI. A better understanding of these associations can lead to interventions to reduce suicide risk in this vulnerable population. My main objective herein is to examine suicide risk in the homeless, veteran population with TBI. I used a pre-existing data set from the National Center on Homelessness among Veterans (here-to-fore known as the parent study) on a sample of US homeless veterans with a history of TBI. There are numerous ways for measuring suicide risk. Within the parent study, the investigators opted to use the MINI International Neuropsychiatric Interview (MINI) to assess a broad range of psychiatric conditions, which included a module on suicidality (Sheehan et al., 1998).

I propose to describe the associations between suicide risk and specific physical, psychological, social, and military factors in homeless veterans with TBI. To achieve this objective, in Chapter 1, I discuss why this area of research is significant, the purpose of conducting this research, and my specific aims. In Chapter 2, I provide an overview of relevant background information, followed by a discussion of the theoretical framework designed to support this area of research, and a review of the current literature. In Chapter 3, I present the methods I used to conduct this research. In Chapter 4, I present my results, and in Chapter 5, I discuss the results, their implications, and future directions for my research.

Significance

Suicide is a tragic, but preventable public health problem that continues to be poorly understood. Globally, there are an estimated 10 to 20 million non-fatal suicide attempts every year (Bertolote & Fleischmann, 2002). In the US, one suicide death is estimated to occur per every 25 attempts (Crosby, Han, Ortega, Parks, & Gfoerer, 2011). Both human and economic costs related to suicide are significant. Suicide and suicide attempts result in an estimated \$34.6 billion in combined medical and work loss costs (CDC, 2013).

The Pentagon has recently reported a record number of suicides within the military, making this line of work increasingly relevant. Suicide rates among US service members in 2013 were the highest since 2001 when the Department of Defense began keeping detailed statistic numbers of those killed in the war (Department of Defense Suicide Event Report [DoDSER], 2013). Suicide among troops and veterans has also just been named the #1 policy priority of the Iraq and Afghanistan Veterans of America (IAVA)'s 2014 policy agenda (IAVA, 2014). Numerous service members return to the civilian population each year as veterans, and suicides are reported to represent approximately one in five deaths in young veterans returning from Iraq and Afghanistan (Glantz, 2010). Suicide risk, therefore, is a critical threat to the health and well-being of veterans and a highly important area of study.

While suicide mortality rates in the military have increased since the beginning of Operation Iraqi Freedom and Operation Enduring Freedom (OIF/OEF) (AFHSC, 2012), rates of TBI have also increased during these wars, and importantly are labeled the “signature wound” in those returning from Iraq and Afghanistan (Savage, 2009). The

Department of Defense (DoD) and the Defense and Veteran's Brain Injury Center (DVBIC) estimate that 22% of all combat casualties from the current conflicts are due to brain injuries, compared to only 12% of combat casualties from the Vietnam War (Summerall, 2013). This increased rate makes understanding the risk for suicide in veterans with TBI more significant now than ever. Additionally, service members are often returned to full duty status shortly after experiencing a TBI, and unfortunately many times experience a subsequent brain injury. Repeated injury to the brain, referred to as repeat TBI (rTBI), has also become an important phenomenon for those serving in the military and may be particularly relevant after discharge (MacGregor, Dougherty, Morrison, Quinn & Galarneau, 2011).

Along with TBI, homelessness is another significant problem for veterans, which complicates our understanding of suicide risk in this population. Veterans who were diagnosed with TBI at the time of separation from active duty were found to be three times more likely to end up homeless than those without TBI (Department of Veterans Affairs, 2012). The US Departments of Housing and Urban Development (HUD) reported that 57,849 veterans were homeless on a given night in January 2013 (HUD, 2013). Investigators showed TBI prevalence within homeless populations to be as high as 50% (Hwang et al., 2012). Because of the large proportion of veterans who are affected by homelessness, TBI, and suicide, and given that the number of veterans has increased within recent years, this area of research is not only timely, but critical.

In those who are veterans, the literature suggests that being homeless, and sustaining a TBI, can each independently affect an individual's risk for suicide (Brenner et al., 2011; Goldstein et al., 2012). Investigators from the parent study at the National

Center on Homelessness Among Veterans studied this as a broader issue by attempting to identify lifetime prevalence of TBI among veterans experiencing homelessness, establishing validity of a TBI screening tool in homeless veterans, and comparing psychiatric outcomes between homeless veterans with and without a lifetime history of TBI. I am specifically interested in using the data collected during that study to investigate the physical, psychological, social, and military factors associated with a risk for suicide in homeless veterans with TBI, which will assist in identifying individuals who are at greatest risk for suicide, and will guide the development and testing of interventions to prevent suicide in this population.

Specific Aims

My short-term goals for this project are to: 1) describe the associations among suicide risk (feelings of hopelessness, thoughts of being better off dead, thoughts of hurting oneself, thoughts about suicide, or a prior suicide attempt) and specific physical, psychological, social, and military factors; and 2) describe the association of utilization of VA healthcare services (VA Mental Health, VA TBI, and other VA inpatient and outpatient visits) and suicide risk. For purposes of this study, I am defining the associated factors as: physical (age, gender, race, TBI severity, repeat TBI), psychological (post-traumatic stress disorder [PTSD]), depression, anxiety, bipolar disorder, psychotic disorders), social (marital status, alcohol/drug abuse, religious affiliation, education), and military (rank, branch, deployments, combat exposure).

Aims and Hypotheses

In a sample of homeless US Veterans who have experienced at least one TBI, my hypotheses and aims are below:

Hypothesis #1

High risk for suicide is significantly associated with certain *physical* (age, gender, race, TBI severity, repeat TBI), *psychological* (post-traumatic stress disorder [PTSD]), depression, anxiety, bipolar, psychotic disorder), *social* (marital status, alcohol/drug abuse, religious affiliation, education), and *military factors* (rank, branch, deployments, combat exposure) when compared to those with low, moderate, or no risk for suicide.

Aim 1a. Compute descriptive statistics for specific physical, psychological, social, and military factors (as mentioned above) for the total sample, as well as those with either no/low/moderate risk or high risk for suicide, and determine differences between the groups.

Aim 1b. Determine the strength of the associations between high risk for suicide and each of the selected physical, psychological, social, and military factors (as mentioned above).

Aim 1c. Determine which selected factors: physical, psychological, social, and military factors (as mentioned above) are significantly associated with high risk for suicide in a multivariable statistical model.

Aim 1d. Determine which interactions within the variables found within the final multivariable model are most significantly associated with high risk for suicide.

Hypothesis #2

Utilization of VA healthcare services (including Mental Health, TBI, or other healthcare visits) is significantly associated with a lowered risk for suicide (no/low/moderate risk), when compared to those at high risk for suicide.

Aim 2a. Compute descriptive statistics of the utilization of VA mental health services, the utilization of VA TBI services, and the utilization of all other VA healthcare services, for the total sample, as well as those with either no/low/moderate risk or high risk for suicide, and determine differences between the groups.

Aim 2b. Determine the strength of the associations between suicide risk and the utilization of VA mental health services, the utilization of VA TBI services, and the utilization of all other VA healthcare services, in those with no/low/moderate risk vs. high risk for suicide.

Aim 2c. Determine if utilization of VA mental health services, the utilization of VA TBI services, or the utilization of any VA healthcare services are significantly associated with either no/low/moderate risk or high risk for suicide in a multivariable statistical model, when controlling for selected physical, psychological, social, and military factors.

CHAPTER TWO

Introduction

Global rates of suicide have increased sixty percent within in the last forty-five years, with a reported one suicide occurring in the world every forty seconds (World Health Organization [WHO], 2010). According to the World Health Organization (WHO), suicide rates are expected to increase another 2.4% around the world by the year 2020 (Bertolote & Fleischmann, 2002). Nationally, suicide deaths outnumber homicide by almost two to one (CDC, 2010). During 2008–2009, an estimated 8.3 million adults in the US reported having suicidal thoughts within the past year, with an estimated 2.2 million of them reporting having made suicide plans within the past year (CDC, 2010).

Within the military, suicide rates have doubled since the start of the wars in Afghanistan and Iraq (DOD, 2012; Griffith, 2012) and suicide is now the second leading cause of death among active military personnel (AFHSC, 2012). Due to the steady rise in military suicides, the Department of Defense Suicide Prevention Task Force on the Prevention of Suicide by Members of the Armed Forces was established in August 2009 (DoD, 2010). The Army's Vice Chief of Staff, General Lloyd J. Austin III, has called suicide “the toughest enemy he's faced in his 37-year Army career” (Tarantino, 2012).

Research related to understanding suicide risk is critical. Homeless veterans with TBI are an extremely underrepresented group within the literature in regards to suicide risk. The purpose of my study is to describe the associations among suicide risk and selected physical, psychological, social, and military factors and to describe the association of utilization of VA healthcare services (VA Mental Health, VA TBI, and other VA inpatient and outpatient visits) and suicide risk. In Chapter 2, I provide an

overview of relevant background information with respect to 1) suicide risk within and the military; 2) suicide risk and TBI; 3) TBI in the military; 4) TBI and homelessness; 5) homelessness and the military; and 6) homelessness and suicide risk. Then, I describe the theoretical framework guiding my research, followed by an analytical review of the current literature.

Background

Suicide, Suicide Risk, and the Military

Military suicide rates have doubled in recent years. In 2012, deaths from suicide were two times greater than deaths from combat (Burns, 2012). Since 2010, suicide has been the second leading cause of death among US military service members (AFHSC, 2012). The Armed Forces Health Surveillance Center reports that during 1998-2011, 2,990 service members died by suicide while on active duty (AFHSC, 2012). Although this number seems significant, it is an underestimation of suicide in the US military. For instance, it only reflects deaths by suicide, and not suicide attempts. It also does not include individuals who die by suicide after their military service has ended (AFHSC, 2012).

Suicide among veterans appears to be a more significant problem than suicide in the active duty military. Estimates suggest that one active duty service member dies by suicide approximately every 36 hours (DoD, 2010), whereas one veteran dies by suicide every 65 minutes (Zoroya, 2013), which is up from prior reports of every 80 minutes (Department of Veterans Affairs, 2010). Veteran suicide rates are estimated around 22 per day, in comparison to approximately one active duty service member per day (Haiken, 2013).

Suicide risk is an important phenomenon when considering the consequences of military service. Of the total US population suicides per year (approximately 35,000-40,000) (CDC, 2012), 20% are veterans (Department of Veteran Affairs, 2012). Veterans make up such a high proportion of suicides in this country, with one in five suicide deaths per year being a veteran (Haiken, 2013). The American Psychiatric Association reports that although male veterans are at twice the risk of suicide than similar males in the general population, females veterans are thought to be at a three times higher risk than the comparable female population (American Psychiatric Association, 2004).

During 2008-2012, the Veterans Health Administration (VHA) reported 950 suicide attempts per month in veterans receiving healthcare (Department of Veteran Affairs, 2012). McCarthy et al. (2009) found a 66% increase in suicide risk among a sample of veterans receiving services within the VHA, compared to those observed within the general population. Pietrzak et al. (2010) distributed random surveys to 167 veterans in the waiting room of mental health and primary care clinics, who were within one year of return from deployment in Iraq or Afghanistan. Of these 167 veterans, 36 (21.6%) reported suicide ideation. Additionally, out of 3,069 Navy and Marine Corps servicemen who were surveyed during discharge from active-duty service in Mansfield, Bender, Hourani and Larson.'s (2011) study, 203 (6.6%) reported suicidal or self-harming ideation during the past 30 days.

Suicide Risk and TBI

The rise in military TBI rates, as well as rates in suicide attempts and mortality in recent years, has highlighted the relationship of TBI and suicide. Investigators are suggesting that there is a neurological impact of TBI on mood centers in the brain that

can increase suicidal ideation. TBI symptoms are complex and variable since the brain controls a myriad of functions from basic motor and sensory processing to planning behavior, communication, and regulating emotions. Those with a diagnosis of TBI are said to be at greater risk for suicide than those without TBI because injury to certain areas of the brain cause altered behavior, corrupt judgment, poor decision making, heightened impulsivity, aggression and changed personality style (Brenner et al., 2011; Oquendo et al, 2004). Interestingly, some investigators have found veterans with a history of TBI to be 1.55 times more likely to die by suicide than veterans without a history of TBI (Brenner et al., 2011).

When examining individuals within the general population with a history of TBI, Silver, Kramer, Greenwald and Weissman (2001) reported rates of suicide attempts to be 8.1% compared to 1.9% of those without TBI ($p = 0.0001$). Simpson and Tate (2002) found 23% of their civilian sample with TBI had suicide ideation and 18% had made a suicide attempt post-TBI. Tsaousides, Cantor and Gordon (2011) found similar results when evaluating suicide ideation in a sample of community-dwelling individuals with TBI, where 28.3% screened positive for suicidal ideation. Depending on the severity of the head injury sustained, investigators estimate suicide rates among individuals with a history of TBI to be between 2.7 and 4 times higher when compared to those without TBI within the general population (Teasdale & Engberg, 2001).

TBI and the Military

In addition to the association between TBI and suicide, TBI is also associated with military service. Olson-Madden et al. (2010) screened a sample of veterans seen at a substance abuse clinic for TBI. The 70 veterans who were screened reported a total of

236 TBIs, with an average of 3.4 lifetime TBIs. Experience of TBI during the wars in Iraq and Afghanistan affect one in every six US military service members (Savage, 2009). Other reports estimate that 20% of the 2.3 million US military service members deployed to Iraq or Afghanistan have experienced a TBI (Goldstein et al., 2012). Rates of TBI in the military have also increased drastically since the start of the Iraq and Afghanistan wars due to improvements in protective combat armor and advances in the medical field that have allowed those with TBI to survive these injuries more today than in the past (Quinlan et al., 2010). However, despite the prevalence of TBI in veterans, screening for TBI remains inadequate. For example, 57% of the veterans in Tanielian and Jaycox's (2008) study were never been evaluated by a physician for brain injury.

rTBI and Suicide Risk in the Military and Athletics. The issue of rTBI has been receiving increased attention in the military, given the number of TBIs US soldiers have experienced during the recent wars. One study found the median time interval between the first and the second TBI to be 40 days, with 20% of the TBIs occurring within 2 weeks of the first, and 87% occurring within 3 months (MacGregor et al., 2011). Rates of TBI have increased, not only from the wars in Afghanistan and Iraq, but also from military training (Cifu et al., 2010). While preparing for deployment, some service members are subjected to as many as 12 explosions per day during training exercises, and even higher numbers per night (Kelley et al., 2010).

Compared to a single TBI, a repeat brain injury has devastating effects for the individual, prolongs time to recovery, increases symptoms, and makes the risk for suicide even greater (Deutsch-Lezak, 1995). Most literature surrounding rTBI involves sports injuries. The first description of the concept of rTBI in the literature was in 1922 in an

article (Martland, 1922), which described a condition in boxers referred to as “punch drunk syndrome.” This phenomenon would later be described in the literature as chronic traumatic encephalopathy (CTE). The Center for the Study of Traumatic Encephalopathy (CSTE) defines CTE as a progressive degenerative disease of the brain, which can occur in individuals with a history of repetitive brain trauma (CSTE, 2013).

CTE was first described in 2002 with a report of an autopsy of professional football player, Mike Webber (Omalu, 2011). Interestingly, Omalu (2011) found brain abnormalities also consistent with CTE in an autopsy in 2010 of a 61 year old deceased Vietnam War veteran. Goldstein et al. (2012) compared post-mortem brains of four veterans with known blast exposure and/or concussive injury to four athletes with repetitive concussions, and found similar neuropathological changes in brain tissue in both. CTE can begin to manifest immediately, or years after the last TBI, and typically begins with cognitive and emotional disturbances, including impulsivity, aggression, depression, memory loss, confusion, impaired judgment, and in some cases progressive dementia (CSTE, 2013). These symptoms can lead to an increased risk for suicidal behavior.

The association between suicidal behavior and rTBI has received heightened attention recently in the media. Following his death by a self-inflicted gunshot, football player Dave Duerson was diagnosed with CTE (Schwartz, 2011) and a similar scenario occurred with the 2012 suicide death of linebacker Junior Seau (Belson, 2013), safety Ray Easterling (Tierney, 2012), and lineman Shane Dronett (Smith, 2011). Omalu et al. (2011) reported a case in the military related to a 27 year old US Marine Corps Iraqi war veteran who committed suicide. On autopsy, he was found to have CTE changes

consistent with changes found in the brains of professional athletes with CTE (Omalu et al., 2011).

TBI and Homelessness

After experiencing a TBI, an individual also has a higher risk of reduced socioeconomic status than those without TBI. Individuals with TBI can have difficulty maintaining employment and managing their finances due to cognitive impairments, which can ultimately increase the individual's risk for becoming homeless (Hwang et al., 2008). Homelessness is defined as “a situation when an individual lacks a fixed, regular, adequate nighttime residence, including those people sleeping in a public or private place not designed for regular sleeping accommodation for human beings, as well as those in shelters, transitional housing, and welfare hotels” (HUD, 2010).

TBI is more prevalent in those who are homeless as compared to their housed counterparts (Hwang et al., 2008). The Department of Veterans Affairs (2012) reports that having a TBI makes an individual three times more likely of becoming homeless than those without a TBI. Other investigators have found that from 38% to 53% of their homeless samples reported a history of TBI, and the majority of these samples (70 to 90%) reported that the TBI occurred prior to being homeless (Gonzalez, Dieter, Natale, & Tanner, 2001; Hwang et al., 2008; Oddy, 2012; Solliday-McRoy, Campbell, Melchert, Young & Cisler, 2004). Furthermore, when Hux, Schneider and Bennett (2009) screened a sub-sample of 240 homeless people for TBI, 19.58% were found to have sustained at least one blow to the head, received medical attention because of an injury to the head, reported a loss of consciousness or period of confusion because of an injury to the head, or had a significant neurologically-based medical condition.

Homelessness and the Military

In addition to the high prevalence of TBI within the homeless population, there is also a high prevalence of veterans within the homeless population. Dejak (2011) argued that veterans are 50% more likely than other Americans to become homeless (Dejak, 2011), although he does not state the source of this statistic. The U.S. Department of Housing and Urban Development's (HUD) 2013 *Annual Homeless Assessment Report to Congress* showed that approximately 57,849 veterans were homeless in the U.S. on one particular night in January (HUD, 2013).

Unemployment rates are higher for veterans, compared to non-veterans, which also puts them at an increased risk for homelessness (Plumer, 2013). In 2010, the US Department of Labor found that more than 20% of veterans who served in Iraq or Afghanistan were unemployed within the past five years (Dejak, 2011). Approximately 12% of post-9/11 veterans were unemployed as of October, 2011, compared to 9% of the general population (Bureau of Labor Statistics, 2012). A study in 2007 showed that 18% of veterans who searched for jobs one to three years after discharge from the military were unemployed (Bureau of Labor Statistics, 2012).

Some studies show that lower income and unemployment can contribute to suicidal behavior. Investigators found that individuals within the general population earning less than \$17,000 per year have over two times higher rates of suicide attempts than individuals earning more than \$17,000, when adjusting for age, marital status, race, gender, and employment ($p < 0.01$) (McMillan, Enns, Asmundson & Sareen, 2010). Employment difficulties are only one factor that contributes to a veteran being at risk for

homelessness. Other factors may include psychological conditions, adaptation issues, or as mentioned above, TBI.

Homelessness and Suicide Risk

Veterans who are homeless may also be at a greater risk for suicide, as the literature suggests an association exists between suicide risk and homelessness. In a sample of 161 homeless individuals, Fitzpatrick, Irwin and Lagory (2007) found 31% (50) of them to have thoughts of committing suicide since becoming homeless. These investigators found that this rate was approximately ten times higher than the annual percentage of the housed population. When Strehlau, Torchalla, Kathy, Schuetz and Krausz (2012) investigated suicide in a sample of 193 homeless women, they found 50% (97) of the women reported at least one suicide attempt in their lives and 26% (50) reported suicidal thoughts within the past 12 months. Additionally, Goldstein et al. (2012) interviewed a group of 3,595 homeless veterans and found that within the past 30 days, 482 (13%) of the homeless veterans had suicide ideation, and 149 (4%) had attempted suicide. Desai, Liu-Mares, Dausey and Rosenheck (2003) found similar results in a sample of homeless people with mental illness. Eynan et al. (2002) controlled for mental illness in a homeless sample and found that 61% reported suicidal ideation and 34% had attempted suicide.

Conceptual Framework

Ecological Systems Theory

For purposes of my research, I adapted Bronfenbrenner's Ecological Systems Theory. The Ecological Systems Theory was originally developed in the 1970's to address the associations between an individual and his/her exposed

environmental/ecological systems (Bronfenbrenner, 1994). These systems are referred to as: the microsystem, the mesosystem, the exosystem, the macrosystem, and the chronosystem. Bronfenbrenner (1994) notes that in order to understand human development, one must also understand the ecological systems in which the individual lives. He studied human development in terms of real-life settings and real-life situations.

Ecological Systems theory contains two fundamental propositions, which Bronfenbrenner (1994) describes as interrelated. First, human development happens through processes of interactions between the individual and the persons, objects, and symbols in their immediate environment (Bronfenbrenner, 1994). Second, the form, power, content, and direction of these interactions vary from each other, but are all related jointly and influenced by the characteristics of the individual and/or their environment in which the interactions are taking place (Bronfenbrenner, 1994).

Adaptation of the Ecological Systems Theory

Bronfenbrenner's theory has been adapted for use in numerous settings and contexts. Although its original intention was for use in examining influences on child/human development, I adapted it to ground my research aimed at understanding the associations surrounding suicide risk, specifically in homeless veterans with TBI.

Associated factors fall into one of the following five socially organized sub-systems:

Microsystem. This sub-system is related to the immediate environment of the individual. Bronfenbrenner (1994) explains that the microsystem has the most direct impact on the individual. It is within the microsystem that all other subsystems operate. The microsystem describes immediate environments such as family, work, and school. Although I include variations of these within my model, I have adapted the concept of

microsystem to instead focus on the immediate physical factors that influence an individual's risk for suicide, including age, race, gender, severity of TBI, and total number of TBI.

Mesosystem. This sub-system refers to the relationships among the different microsystems. In my adaptation of the ecological systems theory, I am labeling the next layer of interactions: "psychological", as I believe these factors are the most influential, after the physical factors, in terms of an individual's risk for suicide. In this sub-system, I am including the following psychological factors: post-traumatic stress disorder (PTSD), depression, anxiety, bipolar disorder, and psychotic disorder. I have framed it to include the relationships among the psychological conditions in my model and their interactions between the microsystems. Different interactions between psychological factors and the factors within the microsystem may result in different risk for suicide. For example, in a person who has depression, their risk for suicide may be different whether they are a male or female.

Exosystem. In Bronfenbrenner's model, relationships involving the sub-system of the exosystem do not directly include the individual, but indirectly influence the individual's development. I have chosen to adapt the exosystem for my model to include an additional system of influencing factors, which I am labeling as: social. In the mesosystem, I was interested in examining the relationships surrounding psychological factors. In the exosystem, I have broadened this to include social factors. Here, I am defining social to include: marital status, alcohol/drug abuse, religious affiliation, and educational level, which are outside of the individual self, but also impact the individual's risk for suicide.

Macrosystem. This sub-system has to do with the individual's culture in which s/he lives, and the overarching beliefs and values that are influenced by this culture. Shein (2010) defines culture as the stability and rigidity of how we are supposed to perceive, feel and act in a given society, organization or occupation, that is taught through various socialization experiences. In my model, I am specifically interested in the associations between the individual and the culture of the military, in terms of this cultural influence on suicide risk. I have labeled this sub-system: community/military, to highlight that the community an individual belongs to becomes that individual's culture, and in my model these individuals belong to the military culture. Within this sub-system, I have included: military branch, military rank, utilization of VA healthcare services, deployment history, and combat exposure. Bronfenbrenner (1994) describes this sub-system as a "societal blueprint for a particular culture" (p.40). Within my model, the factors I have included lay out the societal blueprint of the military culture.

Chronosystem. This sub-system refers to events that can change over time and transitions over the life of an individual. Bronfenbrenner (1994) describes it as the surrounding environment that influences the individual's development across the span of their life. This sub-system is said to "extend the environment into the third dimension" (Bronfenbrenner, 1994, p. 40). For purposes of my model, I have acknowledged the chronosystem, although I have chosen not to include this sub-system in my model, as I am only interested in the measurable factors included under the other four sub-systems mentioned above. In the next section, I will discuss the literature relevant to the development of my conceptual framework of the key factors that I hypothesize are associated with suicide risk.

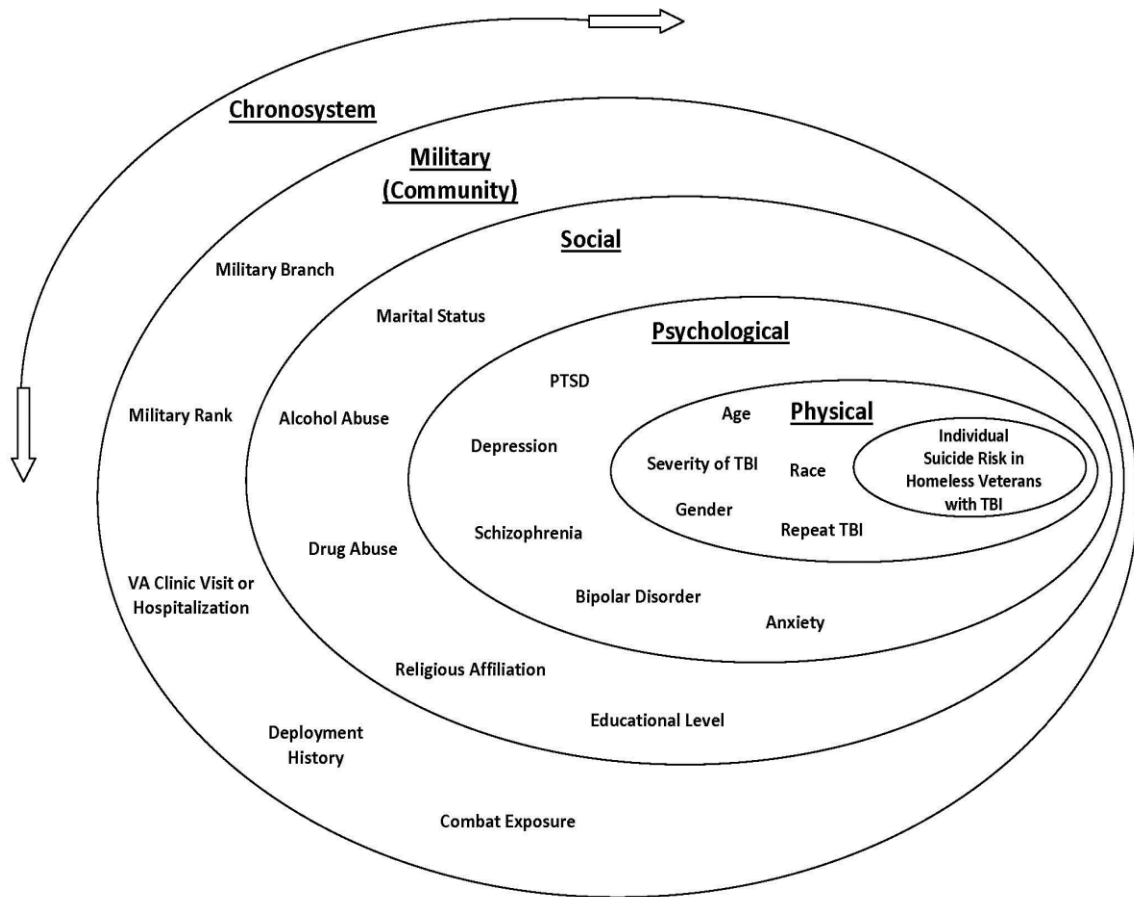


Figure 1. Suicide risk in homeless veterans with TBI model (SRHV-TBI model)

Literature Review

I have chosen to perform my review of the literature for the risk factors, presented in Figure 1, predominately based on their association with veterans. I will attempt to link information related to homelessness and TBI, as they pertain to my sample. In addition, I will present information related to the general population when it places findings from the military literature within the context of the general population, for comparison.

Physical Factors

Traumatic Brain Injury (TBI). Investigators suggest that those with histories of TBI have a greater prevalence of suicide attempts compared to those without a history of

TBI (Silver et al., 2001). When Wood, Williams and Lewis (2010) examined suicide ideation in a non-military sample with TBI, they found that 33% of their sample had suicide ideation, compared to only 1.4% of those without TBI. In an Australian study conducted in 2003 with a group of outpatients with TBI, Teasdale (2003) found 23% had suicidal ideation and 17% attempted suicide over an average of five years following TBI. When Byran et al. (2013) investigated suicide in an outpatient TBI clinic on a US military base in Iraq, they found that 16% of those with a diagnosis of TBI had suicidal behaviors, whereas those without histories of TBI had no suicidal behaviors. However, in this sample there were 158 individuals with TBI, but only 23 without. The results may have been different had there been an equal representation of TBI within the sample.

When investigating suicide in a sample of over 5,000 individuals with and without TBI, Silver et al. (2001) found that those with TBI were significantly more likely to have made a suicide attempt within their lifetime when compared to those without TBI, 8.1% vs. 1.9% respectively ($p < 0.0001$). They found that those with a history of TBI were 4.5 times more likely to attempt suicide than those without TBI, even after controlling for alcohol abuse, sociodemographic variables (age, sex, marital status and SES), and quality of life (Silver et al., 2001). Additionally, when Harrison-Felix (2012) analyzed data from 1999-2007 related to lifetime expectancy after a TBI, he found that having a TBI led to a risk of dying from suicide to be two times higher than those without TBI.

Brenner and Ignacio et al. (2011) also found that veterans with a diagnosis of TBI were 1.5 times more likely to die from suicide, when compared to veterans without TBI, even after controlling for psychiatric comorbidities and demographics ($p < 0.0001$).

However, in a separate study, Brenner and Betthausen et al. (2011) found that TBI only increased the likelihood of a suicide attempt when the veteran also had a diagnosis of PTSD, but not with TBI alone ($p = 0.04$). The results from the first study (Brenner & Ignacio et al., 2011) showed results with stronger significance than the latter study ($p = 0.0002$ vs. $p = 0.04$) and involved a larger sample (438,679 vs. 241). In contrast, Skopp, Trofimovich, Grimes, Oetjen-Gerdes and Gahm (2001) did not find an increased likelihood of suicide in service members with TBI even when controlling for mood disorders, PTSD, alcohol dependence, and relationship problems.

Repeat TBI (rTBI). The role of repeated injury in veterans is important to understand. For example, in a sub-sample of veterans being seen at an outpatient substance abuse clinic, Olson-Madden et al. (2010) found 70 veterans reported a total of 236 TBIs. The investigators also found that those with TBI had sustained anywhere from one to twelve TBIs each, with an average of 3.4 TBIs in their lifetimes. Unfortunately, little is known about the association of rTBI and suicide in veterans.

Severity of TBI. Severity of TBI may also play a role in the association between TBI and suicide. In a large sample ($n = 31,411$) Teasdale and Engberg (2001) investigated suicide in those with a history of TBI and found that those who suffered cerebral contusions or intracranial hemorrhages had a significantly greater risk of suicide compared to those with less severe injuries, such as concussion or a cranial fracture. Replicating the Teasdale and Engberg (2001) study, Brenner and Ignacio et al. (2011) examined the association of TBI severity and suicide risk within a veteran population ($n = 438,679$), however they found that veterans with a history of concussion/fracture were about 1.98 times more likely to die of suicide ($p = 0.0002$) and veterans with a history of

cerebral contusion/intracranial hemorrhage were 1.34 times more likely to die of suicide ($p = 0.006$), when compared to veterans without TBI. In contrast, Simpson and Tate (2002) found no significance between severity of TBI and increased rates of suicide post-injury in outpatients with TBI ($n = 172$). However, the Teasdale and Engberg (2001) study and the Brenner and Ignacio et al. (2011) study included much larger samples (145,440 and 438,679 respectively), whereas the Simpson and Tate's (2002) study only included 172 outpatients. While these findings demonstrate that severity of injury is probably linked to suicide risk, larger sample sizes are necessary to evaluate suicide risk in relation to TBI severity.

Age. The Department of Defense Suicide Event Report [DoDSER] (2011) found the majority of active duty service members who attempted suicide were under the age of 25 years (57%). Also, when the Department of Defense (DOD) conducted an analysis of suicides that occurred between 2003-2009, they found that 46% of active duty Army suicides, and 40% of active duty Navy suicides, were under 24 years of age (DOD, 2012). There were similar findings within civilian populations (Ilgen et al., 2010; Kemp & Bossarte, 2012).

These rates differed for veterans. For example, when Kemp and Bossarte (2012) analyzed data from the Suicide Behavior Reports for 2009-2012, they found that more than 69% of all veteran suicides were among those over 50 years old. The majority (>60%) of veterans who committed suicide in Ilgen et al. (2010)'s study were found to be between the ages of 50-79 years old. Kaplan et al. (2007) found 77.62% of veterans who committed suicide were older than 45 years old, with the majority being >65 years old. These findings were particularly noteworthy because they were derived from a sample

representative of all veterans in the US general population, whereas most other studies in the literature only included those who sought care within the VA system, which may not represent all veterans. However, when comparing veterans to non-veterans, the veteran group was all male, while the non-veteran group was comprised of 62.48% female.

The literature does appear to suggest an association between older age and suicide risk in veterans. However, this may be influenced by the fact that most research conducted on veterans tends to be heavily weighted toward individuals of an older age, whereas research involving active duty service military tends to be weighted more on a younger age. Also, the veteran population in general is older than the active duty population. In 2009, the median age of male veterans was 64 years old (National Center for Veterans Analysis and Statistics, 2011), whereas, the average age of active military in the US is 25-30 years old (Defense Manpower Research, 2013).

Gender. Crosby et al. (2011) analyzed 88,800 surveys from the National Survey on Drug Use and Health (NSDUH) during 2008–2009 and found that females were more likely than males to have had suicidal thoughts within the past year, although men were more likely to actually have made suicide plans or attempted suicide (Crosby et al., 2011). When Lemaire and Graham (2011) examined factors associated with suicidal ideation in veterans returning from Iraq and Afghanistan, they found being a female put veterans at a three times greater likelihood of contemplating suicide than males ($p < 0.002$). However, when examining suicide prevalence in the Army from 2001 to 2009, Griffith (2012) found that being a male made a soldier 3.4 times more likely to commit suicide than being female ($p < 0.001$). Within the general population, as well as within the military, females appear to contemplate suicide more often, whereas men commit

suicide more often. Interestingly, the American Psychiatric Association (2004) reported that female veterans have a three times greater risk for suicide than females in the general population; male veterans have twice the risk of suicide compared to males in the general population.

These results differed within homeless samples, whether they had a military background or not. When examining suicide risk in a homeless population, Eynan et al. (2002) found 56% of the men and 78% of the women reported prior suicidal ideation, while 28% of the men and 57% of the women had attempted suicide. They noted that suicide ideation is 3.56 times more frequent in homeless women than homeless men ($p = 0.001$), even with a sample comprised of 77.6% males. In a study of homeless veterans, Goldstein et al. (2012) found that female homeless veterans were at a 2.48 greater risk of attempting suicide than male homeless veterans ($p < 0.01$). Additionally, Benda (2005) found that homeless female veterans were more likely to be thinking about suicide (48.7% vs. 44.4%), and to have attempted suicide within the past 5 years (36.5% vs. 26.7%) when compared to homeless male veterans.

Race. In the 2011 DoDSER, 76.74% of military service members that year who committed suicide were White, compared to 12.9% who were Black. Although, these rates mirrored the proportions of Whites and Blacks in both the military (White =74.6%, Black =17.8%) and in the general US populations (White =75.1%, Black =12.3%) (Defense Manpower Research, 2013). However, Kemp and Bossarte (2012) analyzed data from the Suicide Behavior Reports for 2009-2012 and found that more Whites committed suicide in the veteran group when compared to those who were not veterans, 92.6% vs. 87.7% ($p < 0.0001$). Suicide was also found to be more prevalent in Whites,

compared to non-Whites in Kaplan et al's. (2007) study, where they found 95.53% of veterans who committed suicide to be White, compared to 72.35% of non-veterans who committed suicide to be White. When Britton, Ilgen, Rudd and Conner (2012) examined veterans who committed suicide, they found Whites had a 1.57 greater likelihood of committing suicide when compared to other races ($p < 0.05$). Black, Gallaway and Bell (2011) also found that Whites were at a higher risk for committing suicide than Blacks in the Army (74.9% vs. 12.6%, $p < 0.001$). Interestingly, Goldstein et al. (2012) found a negative odds ratio when assessing risk for suicide ideation (0.66) and attempts (0.6) in African-Americans, suggesting that being African-American may be a protective factor ($p < 0.01$).

Psychological Factors

When the Army conducted an analysis of suicide completions that occurred between 2005-2009, they found that almost half of those who committed suicide had some type of behavioral disorder (DoD, 2012). The Marine Corps conducted a similar analysis for the time period between 1999-2007 and found that 40% of people who committed suicide had a history of a mental health disorder (DOD, 2012). The Navy reported similar findings for suicides from 1999-2009 (DOD, 2012).

PTSD. When comparing Operation Iraqi Freedom and Operation Enduring Freedom (OIF/OEF) veterans one year after deployment, Pietrzak et al. (2010) found that 70.6% of veterans with suicide ideation also screened positive for PTSD, compared to 15% of veterans without suicide ideation. They found that odds of having suicide ideation to be 3.73 times greater if he/she had PTSD ($p < 0.001$). Several other investigators have replicated these findings, with increased risk for suicide in veterans with PTSD ranging

from 2.8 to 4.45 times higher than those without PTSD (Brenner & Ignacio et al., 2011; Jakupcak et al., 2009; Maguen et al., 2012).

Interestingly, Lemaire and Graham (2011) found that having co-morbid depression and PTSD put veterans at a greater risk of suicide ideation (OR= 18.83), when compared to having depression or PTSD alone (OR= 15.2 and 10.02 respectively, $p < 0.001$). In contrast, Pfeiffer, Ganoczy, Ilgen, Zivin and Valenstein (2009) investigated suicide risk in a sample of veterans with depression, and found that those with comorbid PTSD had significantly decreased odds of suicide (OR 0.87), when adjusting for gender, age, race, ethnicity, marital status, and presence of a substance use disorder ($p < 0.05$).

Depression, Anxiety, Bipolar, and Psychotic Disorders. Pietrzak et al. (2010) found that 64.7% of veterans with suicide ideation screened positive for depression, compared to 8.6% of veterans without suicide ideation. They found that the odds of a veteran having suicidal ideation is 5.97 times greater if he/she is depressed ($p < 0.001$). Jakupcak et al. (2009), Lemaire and Graham (2011), and Maguen et al. (2012) reported similar findings. Anxiety was also reported to be greater in those at risk for suicide. For example, Black et al. (2011) found that relative risk rates for suicide were higher for Army soldiers with anxiety (RR= 14.72), compared to soldiers with no history of a mental health diagnoses ($p < 0.001$). Ilgen et al. (2010) had similar findings. Interestingly, Pfeiffer et al. (2009) found that veterans with comorbid generalized anxiety and depression were 1.27 times more likely to commit suicide than depressed veterans without anxiety ($p < 0.05$).

Black et al. (2011) examined suicide rates in an Army sample, and found that relative risk rates were higher for soldiers with bipolar (RR= 14.26), as well as

schizophrenia/paranoid disorders (RR= 65.78). Ilgen et al. (2010) found male veterans with bipolar disorder were almost three times more at risk of suicide, and female veterans with bipolar disorder were over six times more at risk for suicide. They also found that male veterans with schizophrenia were over two times more at risk of suicide, and female veterans with schizophrenia were over six times more at risk for suicide. However, these investigators followed a cohort of veterans for seven years and only checked psychological conditions at the beginning of the study, so many of the subjects could have developed other conditions over those seven years that contributed to their suicide. In contrast, Lemaire and Graham (2011) did not find bipolar to be a statistically significant predictor of suicide risk. However out of 1,740 veterans in the study, there were only 11 in the sample that had a diagnosis of bipolar. Additionally, Goldstein et al. (2012) did not find schizophrenia to increase the likelihood of suicide ideation or attempts. Although, these investigators did find homeless veterans with hallucinations, which are often a symptom of schizophrenia, to be 4.39 times more likely to have contemplated suicide, and 4.83 times more likely to have attempted suicide within the past thirty days, compared to those without hallucinations ($p < 0.01$).

The prevalence of psychological conditions experienced within the military/veteran population, in those who completed suicide or are at risk, is profound. Bossarte et al. (2012) found that 75% of those who reported suicide ideation had depression, anxiety or PTSD, as compared to 14% of those without suicide ideation ($p < 0.001$). These investigators reported that 52% of those with suicidal ideation were under mental health counseling/treatment, compared to only 9% of those without suicide ideation ($p < 0.001$). Additionally, veterans with a diagnosis of depression, anxiety, or

PTSD were found to be almost 22 times more likely to have suicide ideation, compared to those without a diagnosis. Ilgen et al. (2010), Kaplan et al. (2012) and Schinka et al. (2012) reported similar findings.

Social Factors

Marital Status. The DoDSER (2011) found that of military service members who committed suicide in 2011, 55.48% were married, compared to 35.5% who were never married. Similar results were found when the Army conducted an analysis of suicides that occurred between 2005-2009. They found that 52.1% were married, and 43.4% were single (DOD, 2012). These rates mirrored the proportions of married individuals in the military (enlisted=52.3%, officer =70.2%) (Defense Manpower Research, 2013). Mitchell, Gallaway, Millikan, and Bell (2012) also found that married soldiers are 24% less likely to have suicide ideation compared to those who are not married ($p < 0.05$). Veterans who committed suicide also tended to be married more often than non-veterans who committed suicide (72.09% vs. 50.86%) in Kaplan et al.'s (2007) study.

Although the literature suggests that more veterans who commit suicide tend to be married, it is important to note that being married does not necessarily demonstrate a higher level of social support. For instance, in Kaplan et al.'s (2007) study, more veterans who committed suicide were married, but more claimed to live alone when compared to non-veterans who committed suicide (24.29% vs. 11.88%). Additionally, those who committed suicide who were married may have had relationship troubles. When investigating associated stressors in those that committed suicide, many studies within the literature found that among the biggest stressors were relationship problems (Black et al., 2012; DOD, 2012; Kaplan et al., 2012).

Alcohol/Drug abuse. Investigators suggested that veterans who abuse alcohol or drugs tend to be more at risk for suicide when compared to veterans who do not (Black et al., 2011; Britton et al., 2012; DOD, 2012; Ilgen et al., 2010; Pietrzak et al., 2010). Jakupcak et al. (2009) found veterans who abuse alcohol were at two times greater risk of contemplating suicide, and veterans who abuse drugs to be at a four times greater risk of contemplating suicide, when compared to veterans without alcohol/drug abuse ($p < 0.01$). Maguen et al. (2012) found veterans with substance abuse problems to be almost four times more likely to contemplate suicide than veterans without substance abuse. When Kim et al. (2012) compared veterans who committed suicide to veterans who did not, they found that veterans with alcohol abuse were three times more likely to commit suicide ($p < 0.001$), and those with drug abuse were two times more likely ($p = 0.03$). Interestingly, these investigators also found that veterans who misused prescription drugs had 11 times greater likelihood of committing suicide ($p < 0.001$).

Education. An analysis of the Suicide Behavior Reports from 2009-2012 showed that veterans who committed suicide tended to be more educated than civilians who committed suicide ($p < 0.0001$). This report showed that 35% of the veterans who committed suicide graduated from high school compared to 30.8% of civilians ($p < 0.0001$) (Kemp & Bossarte, 2012). Kaplan et al. (2007) also found veterans who committed suicide to be more educated than civilians in their study, reporting that about 88% of veterans who committed suicide had >12 years of education, compared to about 74% of civilians. Pietrzak et al. (2010) found 70.6% of the veterans within their sample with suicide ideation to have some college or to be a college graduate. However, this number reflected the education level of entire sample, and was not statistically

significant. When Lemaire and Graham (2011) examined factors associated with suicidal ideation in veterans returning Iraq and Afghanistan war, they also did not find education to be a statistically significant predictive factor.

Religion. Some investigators found that having a religious affiliation, and a commitment to its beliefs, can serve as a protective factor against suicide. In a sample of veterans with TBI, Brenner et al. (2009) conducted qualitative interviews to examine preventative factors of suicide among this population. Within their sample, they found many individuals described religion/spirituality as a protective factor against committing suicide. When investigating suicidal behavior within a sample of depressed inpatients, Lizardi et al. (2003) found that those with low moral or religious objections to suicide had higher rates of lifetime suicide attempts, compared to those with high moral or religious objections to suicide (60.1% vs. 34.3%, $p < 0.001$). The investigators found that those with low moral or religious objections to suicide were 1.9 times more likely to attempt suicide than those with high moral or religious objections to suicide ($p < 0.05$). Dervic et al. (2004) found similar results when examining another sample of depressed inpatients. These investigators found 66% of those with no religious affiliation had attempted suicide at least once in their lifetime, compared to 48% of those who did have a religious affiliation ($p = 0.009$).

Military/Community Factors

Branch of Military. The literature suggests that, while suicide rates differ between each branch of the military, rates within all branches continue to increase. The Marine Corps suicide rate increased by 50% from 2011-2012 (48 per year, up from 32), the Air Force rates increased by 16% (59 per year, up from 51), the Navy rates increased

by 15% (60 per year, up from 52), and the Army increased by 9% (182 per year, up from 166) (Starr, 2013). The total number of suicides in the Army is larger than all other branches, and is over three times greater than the total suicides in the Marine Corps (Starr, 2013). More than half of the suicides reported within the military in 2012 were in the Army (Starr, 2013), with rates in the Army having nearly doubled from 2004 to 2008 (Bachynski et al., 2012), and tripled from 2001 to 2011 (Lineberry & O'Connor, 2012). In 2011, overall suicide rates were reported as 22.9 per 100,000 in the Army, 14.98 per 100,000 in the Navy, 14.87 per 100,000 in the Marine Corps, and 13.27 per 100,000 in the Air Force (DoDSER, 2011).

Military Rank. There may be an association between lower military rank and increased risk for suicide. In 2011, the DoDSER (2011) found that 71% of service members who attempted suicide were lower/junior enlisted rather than higher ranks. In a sample of Army soldiers who committed suicide during 2007 and 2008, 54% were found to be of a junior enlisted, non-officer rank (Bachynski et al., 2012). When Black et al. (2011) studied all of the suicides that took place in the Army between 2001-2009, they discovered that approximately 57% were junior enlisted rank, 33% were non-commissioned officers, and only 9% were commissioned officers. However, these findings are difficult to draw conclusions from due to the fact that the military is made up of approximately 84% enlisted service members and 16% officers (Defense Manpower Research, 2013).

Deployments. Black et al. (2011) found that 64% of soldiers in the Army who committed suicide between 2001-2009 were deployed at least once, compared to 35.6% of those that committed suicide who had never been deployed ($p < 0.001$). Based on the

2011 DoDSER, almost half of military service members that year who committed suicide had a recent history of deployment. In contrast, the Armed Forces Health Surveillance Center (AFHSC) reported that about half (55%) of service members who died by suicide during 2008-2010 had never deployed (AFHSC, 2012). When Thomsen, Stander, Mcwhorter, Rabenhorst and Milner (2011) examined the effects of deployment on self-harm and suicide attempts, they found that self-harm was significantly affected by deployment, but suicide attempts were not. Furthermore, cumulative time deployed is also said to be less important than the time interval between deployments (Harben, 2009). Macgregor et al. (2012) found that Marines with shorter time intervals between deployments had higher rates of PTSD ($p < 0.001$). Additionally, deployment history (time and length of deployments) may be less important than the actual type of deployment. For instance, when Gradus, Street and Resick (2011) investigated suicidal behavior in veterans post-deployment, they found deployments to only be significant if they involved combat exposure.

Combat Exposure. Many investigators found that being deployed to areas where there is combat drastically increases the probability of suicidal ideation when compared to being deployed to areas where fighting is not taking place (Cesur, Sabia, & Tekin, 2013). Mitchell et al. (2012) found that soldiers are 32% more likely to have suicide ideation when exposed to combat, compared to those with no combat exposure ($p < 0.001$). In a sample of Army soldiers who committed suicide during 2007 and 2008, 69% were found to have deployed at least once to an area of combat (Bachynski et al., 2012). Maguen et al. (2012) found that those who had greater killing experiences in combat had

a two times greater likelihood of suicidal ideation, compared to those with lower or no killing experiences ($p < 0.05$).

However, other investigators do not support an association between combat exposure and suicide risk. The Armed Forces Health Surveillance Center (AFHSC) reports that 84% of service members who committed suicide during 2008-2010 had no documented combat experiences (AFHSC, 2012). Based on the 2011 DoDSER, direct combat exposure was only reported in approximately 17% of those who attempted suicide, and 15% of those who completed suicide.

VA Outpatient and Inpatient Healthcare Services. Basham et al. (2011) found 88% of the suicide victims ($n = 968$) in their study did not utilize VA healthcare services in the year prior to their death. Of those who did utilize VA healthcare services, 25.9% of the encounters involved inpatient stays, and 38.7% of those who had a psychiatric inpatient stay completed suicide within 30 days of their last admission. Of those who had some type of VA encounter in the year prior to their death, 42% had seen mental health professionals. In this study, only 212 veterans out of 968 utilized VA healthcare services, however not all of these veterans were enrolled in the VA healthcare system. These rates may have differed if all veterans had access to healthcare services at the VA. Veterans returning from OEF and OIF are all eligible for VHA services during the first five years after they return from deployment without additional requirements. For all other veterans, eligibility is determined by factors such as service-related health conditions, disability, age, and income (Veterans Health Administration, 2012). In Ilgen et al's. (2012) study, all veterans ($n = 3132$) were enrolled in the VA healthcare system. They found approximately 95% ($n = 2964$) had a VA medical visit in the year before their suicide,

with only 32.8% being mental health visits. Interestingly, Katz, McCarthy, Ignacio and Kemp (2012) found that veterans 30 years and older had higher rates of suicide if they utilized VA healthcare services. Veterans younger than 30 years had significantly decreased rates of suicide if they utilized VA healthcare services, while those who did not utilize VA healthcare services had increased rates of suicide.

Knowledge Gaps

Most research conducted on veterans tends to be focused on an older, White population (Ilgen et al., 2010; Kaplan et al., 2007). Those below the age of 50 are underrepresented in the literature, as well are non-Whites (Black et al., 2011; Britton et al., 2012; Goldstein et al., 2012; Kaplan et al., 2007). Additionally, males were also greatly over-represented in most studies (Benda, 2005; Eynan et al., 2002; Goldstein et al., 2012; Lemaire & Graham, 2011). These proportions are logical given that the veteran population is primarily over the age of 50 years, White and male, however more effort should be made to include those underrepresented in future studies.

Statistics in the literature related to suicides within the different branches of the military were all in terms of prevalence rates. I found no studies that investigated whether being in one branch vs. another is associated with a greater risk for suicide. I found only a few studies that explored the role of rank (DoDSER, 2011; Starr, 2013; RT, 2013). There may actually be an association between lower military rank and suicide risk., as Junior enlisted (E1-E4) have the highest rates of suicide, when compared to non-commissioned officers, commissioned officers, and warrant officers (Bachynski, et al., 2012; Black et al., 2011; DoDSER, 2011). Although it is difficult to draw conclusions on this, considering the proportions of ranks in the military being approximately 84% enlisted

service members and 16% officers (Defense Manpower Research, 2013). Additionally, junior enlisted service members are not only over-represented within the literature, but they deploy more frequently than officers, which suggests the possibility of an interaction between rank and deployment history. More research is needed to fill the knowledge gaps related to branch and rank.

Mixed findings also occur related to deployment history and combat exposure. Some investigators state that being deployed is associated with a greater risk of suicide (Bachynski, et al., 2012; Black et al., 2011; DoDSER, 2011), while the findings of others do not support this association (AFHSC, 2012; Harben, 2009; Thomsen et al., 2011). Several investigators also state that being exposed to combat during times of war significantly increases risk for suicide ideation or attempts (Bachynski, et al., 2012; Cesure et al., 2013; Maguen et al., 2012; Mitchell et al., 2012), while others do not support this association (AFHSC, 2012; Bossarte et al., 2012; Thomsen et al., 2011). It is possible that the type of deployment (combat vs. non-combat) may in fact be more significant than the actual number of deployments. For instance, some investigators found that deployment history was only associated with suicide risk when it involved combat exposure, which suggests that level of combat exposure may be a confounding variable (Gradus et al., 2011). Further research is needed to examine these relationships.

Some investigators reported that bipolar disorder and schizophrenia are more significant than any other psychological conditions in regards to risk for suicide (Ilgen et al., 2010). Others did not find bipolar disorder or schizophrenia alone to be statistically associated with suicide risk (Goldstein et al., 2012; Lemaire & Graham, 2011). These mixed findings may be due to the underrepresentation of these conditions within the

literature. Also, some investigators suggested that gender may confound the association between suicide risk and both depression and PTSD (Ilgen et al., 2010). Other possible confounding relationships may exist regarding comorbid psychological conditions, for example, depression and PTSD (Lemaire & Graham, 2011; Pfeiffer et al., 2009; Zivin et al., 2007). These relationships need further study.

Only one study addressed religion and suicide in veterans (Brenner et al., 2009). The investigators suggested that those with religious objections to suicide are at a significantly decreased likelihood of committing suicide. However, no other investigators have reported on the role of religion as protection from suicide and more research is needed to fill this knowledge gap. Additionally, there is little existing research which compares utilizers vs. non-utilizers of VA mental health service and its association with suicide risk, and none to my knowledge that looks at utilization of TBI services in this population. Much of the research that exists in the literature involving healthcare utilization related to suicide risk in veterans is conducted during a time when these veterans are presenting for healthcare services (Britton et al., 2012; Desai et al., 2008; McCarthy et al., 2009).

There are many gaps within the literature related to suicide risk in veterans, and more specifically, related to suicide risk in veterans with TBI who are experiencing homelessness. The following are examples of areas that need to be addressed, in order to improve the current state of the science: (1) a more even distribution in age, race, and gender within studies, specifically including more non-White, females, and veterans <50 years old, (2) further examination of the influences of military branch and rank, as well as deployment and combat exposure, (3) a greater inclusion of veterans with bipolar or

psychotic disorders, as well as research examining the interaction effect of having multiple psychological conditions, (4) more inclusion of religious beliefs/influences within studies, and (5) research that increases the knowledge of the influences of VA mental health and/or TBI clinic utilizations and hospitalizations on suicide risk.

This lack of evidence presents a critical knowledge gap that is imperative to address considering the prevalence of veterans who are homeless and who have sustained a TBI. Investigators from the National Center on Homelessness among Veterans are studying this as a larger issue, and have provided me with a database to examine these knowledge gaps further. I attempted to use this data to specifically address the gaps in the current state of the science related to suggested physical, psychological, social, and military factors previously mentioned and their association with suicide risk in homeless veterans with TBI. However, I was unable to include all knowledge gap-related variables mentioned in my study, as I was using a pre-existing database. In the following chapters, I will discuss the methodology used in my study, as well as the findings and conclusions.

CHAPTER THREE

Introduction

I conducted a cross-sectional study using pre-existing data from the National Center for Homelessness Among Veterans, as well as retrospective chart reviews, aimed at describing the associations among suicide risk and specific physical, psychological, social, and military factors; in addition to describing the associations among suicide risk and the utilization of Veterans Affairs (VA) healthcare services (VA Mental Health, VA TBI, and other VA inpatient and outpatient visits). For purposes of my study, I am defining these factors as: physical (age, gender, race, TBI severity, repeat TBI), psychological (post-traumatic stress disorder [PTSD], depression, anxiety, bipolar, psychotic disorder), social (marital status, alcohol/drug abuse, religious affiliation, education), and military (rank, branch, deployments, combat exposure). In Chapter 3, I will provide a detailed description of the parent study that provided the data for my secondary analysis. Then, I will describe the methodology that I used for both my secondary analysis and retrospective chart reviews.

Parent Study

Data for the parent study came from three sites: the Philadelphia VA, Denver VA, and Tampa VA. The Denver facility acted as the coordinating site. For my secondary analysis I used data from the Philadelphia VA only, because of my collaboration with Dr. Ann Elizabeth Montgomery at the Philadelphia VA National Center for Homelessness Among Veterans.

Purpose of the Parent Study

The overall purpose of the parent study was to provide information aimed at identification of lifetime exposure to TBI among homeless veterans, as well as information aimed at encouraging increased TBI screening throughout the VA system. The long-term goal of the study was to increase understanding of lifetime prevalence of TBI, injury history, and outcomes among homeless veterans.

Sample

For the parent study, veterans who presented for homeless outreach services at the Philadelphia VAMC were recruited. To enhance the sample, recruitment was eventually expanded to a downtown drop-in Center where homeless veterans congregated. At the Philadelphia site, 186 veterans who presented for homeless services completed the TBI-4 Questionnaire. From those 186 veterans, 122 veterans completed additional data collection activities including the Demographic Questionnaire (developed by the investigators of the parent study), the Ohio State University TBI Identification Method (OSU TBI-ID) (Bogner & Corrigan, 2009), and the MINI International Neuropsychiatric Interview (MINI) (Sheehan et al., 1998). Subjects were compensated \$20 for participating in the Demographic Questionnaire, OSU TBI-ID, and the MINI part of the study, but they were not compensated for completing the TBI-4. Of these 122 veterans, 112 screened positive for TBI on the OSU-TBI-ID and 106 screened positive for TBI on the TBI-4. Only 103 subjects screened positive for TBI on both the OSU TBI-ID and TBI-4. Because some subjects screened positive on one tool and not the other, I choose to include only those who screened positive on both, to better support the argument that the entire sample had a history of TBI.

Inclusion and Exclusion Criteria. Inclusion criteria for study subjects included veterans at least 18 years of age, seeking homeless services through the Philadelphia VAMC. Exclusion criteria included failure to provide informed consent.

Methods and Instruments. The methods of data collection described below were performed through face-to-face interviews for the parent study. The estimated time for data collection from the subjects to complete the TBI-4 questionnaire was approximately 5 minutes. Data collection using the Demographic Questionnaire, the OSU TBI-ID, and the MINI took approximately 90 minutes to administer. The primary outcome variable in the parent study was the presence of TBI. This outcome was measured using one or two of the following: the TBI-4 and/or OSU TBI-ID (see below for description of the instruments). There was no further subject follow-up after the initial interview.

The TBI-4 Questionnaire. The TBI-4 Questionnaire is an instrument used to screen for a history of TBI. It is not currently considered standard of care at the VA, and was administered in this study with the intent of testing its reliability against the OSU TBI-ID. The TBI-4 is a four-question brief screen that was developed based upon the previous work (Corrigan et al., 2007). The TBI-4 Questionnaire asked the following questions:

- A. Have you ever been hospitalized or treated in an emergency room following a head or neck injury? Y/N
- B. Have you ever been knocked out or unconscious following an accident or injury? Y/N
- C. Have you ever injured your head or neck in a car accident or from some other moving vehicle accident? Y/N

D. Have you ever injured your head or neck in a fight or fall? Y/N

Validity and Reliability. The TBI-4 Questionnaire was developed by the research team in the parent study. No information is currently available on the validity or reliability of this instrument. TBI diagnoses were confirmed using the OSU-TBI instrument.

Ohio State University TBI Identification Method (OSU TBI-ID). The OSU TBI-ID is a structured interview designed to elicit self-report, or report from a close friend or relative acting as a proxy for the individual, of a TBI occurring over a person's lifetime with a focus on: (1) injuries caused by a blow to the head or high-velocity forces; (2) altered consciousness; (3) treatment received; and (4) sequelae. Diagnostically, the OSU TBI-ID is consistent with criteria outlined by the American Congress of Rehabilitation Medicine (Kay, Harrington, Adams, Anderson, & Berrol, 1993). Specifically, it asks questions related to number of injuries, severity of injuries, initial and persistent sequelae, and age of injury.

In the parent study, individuals were first asked to recall injuries involving a blow to the head or neck. They were asked to particularly focus on those that resulted in receiving medical attention in order to avoid initial biases created by eliciting words like “head injury,” “TBI,” “concussion,” “knocked out,” or “loss of consciousness” which can affect the detection of an injury.

Validity and Reliability. The OSU TBI-ID has a reliability between 0.84-0.93 (Bogner & Corrigan, 2007). Information on sensitivity and specificity of this tool could not be found in the literature.

MINI International Neuropsychiatric Interview (MINI). The MINI is a validated psychiatric interview that was administered by a member of the research team to assess the number of psychiatric disorders including but not limited to mania/hypomania (proposed/past), major depressive episode (proposed/reproposed), panic disorder (proposed/lifetime), agoraphobia (proposed), social anxiety disorder (proposed), post-traumatic stress disorder (PTSD), alcohol/substance abuse and dependence (past 12 months), and psychotic disorders, including mood disorder with psychotic features (proposed/ lifetime).

A section of the MINI is dedicated to assessing risk for suicide. A series of 15 “yea” or “no” interview questions were asked, with a designated number of points allocated for each question. The total score was calculated, and the subject was deemed no risk, low risk, moderate risk, or high risk for suicide based on the total score. Subjects deemed to be actively suicidal based on the questions in the MINI were immediately taken to the Emergency Department at the VA Medical Center.

Validity and Reliability. The MINI has a reliability of 0.76-0.93, a sensitivity between 0.46-0.94, and a specificity between 0.72-0.97 (Sheehan et al., 1998).

Data Collection

In the parent study, data were collected at homeless outreach services at the Philadelphia VA Medical Center and a downtown drop-in center where homeless veterans congregated, from December 2010 and September 2011. A member from the research team administered the TBI-4 to all homeless veterans who presented to the Philadelphia VA Medical Center or the downtown drop-in center during the duration of the study. Oral informed consent was obtained for each subject by a member of the

research team, prior to administration of the TBI-4 questionnaire. After oral informed consent was obtained, and the TBI-4 was administered, the veterans were asked if they would be willing to complete an additional three items: the demographics questionnaire, the OSU-TBI-ID, and the MINI. If the veteran agreed to participate further, a different member of the research team obtained written consent prior to administering the three additional items of data collection (if at the Philadelphia VA) or collected contact information, and made arrangements for the veteran to have these three items administered at the Philadelphia VA (if at a drop-in Center).

Data collection was monitored quarterly to check paper and computerized participant data. A member of the research team checked to ensure data had been de-identified with subject Unique Identifiers (UIs), made note of missing data, and ensured that the proper security measures had been used. The PI checked for completeness and accuracy, as well as adherence to security measures. In order to minimize data entry errors, 25% of the data was entered twice and then compared side-by-side in order to assess intra- and inter-data entry reliability.

Purpose and Design of Dissertation Study

The purposes of my study were to describe the associations among suicide risk and specific physical, psychological, social, and military factors; and to describe the association of the utilization of VA healthcare services (VA Mental Health, VA TBI, and other VA inpatient and outpatient visits) and suicide risk. I conducted a cross-sectional study using pre-existing data on a sample of 103 veterans from the National Center for Homelessness Among Veterans. I also performed retrospective chart reviews on this sample of veterans to collect data on healthcare services utilization.

Sample

I used the sample from the parent study. Although data were collected on veterans from three VA sites (Philadelphia, Denver, and Tampa), only data on veterans from the Philadelphia site were included within my secondary analysis. My sample size included 103 veterans.

Inclusion and Exclusion Criteria. Inclusion criteria included veterans at least 18 years of age, seeking homeless services through the Philadelphia VA. Exclusion criteria included those who were not found to screen positive for TBI on both the TBI-4 and the OSU TBI-ID. Based on these criteria, data from 103 veterans were included in my study.

Data Collection and Methods

Formal review and approval were obtained by the Institutional Review Board (IRB) at the University of Pennsylvania, as well as the IRB at the Philadelphia VA Medical Center. I received these approvals prior to beginning data collection for my study, as well as prior to accessing data from the parent study. Additionally, I obtained a work without compensation (WOC) status at the Philadelphia VA Medical Center, which involved computer training to perform chart reviews, HIPAA and privacy training.

With the exception of data related to utilization of healthcare, all other data were collected by a member of Dr. Montgomery's research team, as described above in the parent study. I performed retrospective chart reviews at the National Center on Homelessness Among Veterans using electronic records from the Philadelphia VA Medical Center computer database, in order to collect data on the remaining variables related to utilization of healthcare. These reviews were performed for each of the 103

veterans from the parent study who were found to have positive scores on both the TBI-4 and OSU-TBI screening tools.

When beginning the data collection phase of my study, I was given a master list of all 103 veterans, which contained their birthdate, social security number, and unique identifier. I used the veteran's social security number to look them up in the computerized patient record system (CPRS). To ensure that I had the correct individual, and did not enter in the social security information incorrectly, I used the veteran's birthdate as a double check. After I confirmed the birthdate, I looked at the veteran's first and last name, then closed the computerized chart and re-entered their social security number to make sure the same name came up, as a third check to confirm that I was pulling data on the correct veteran. I did this for every veteran in my study.

When collecting data from the chart reviews, I made two spreadsheets, one for thirty days prior to the parent study interview, and another for one year prior to the parent study interview. To ensure that these cut off dates were accurate. I printed out calendars from google for those years, and then hand-counted back thirty days, to make sure that it was exactly thirty days for each veteran, as some months have more or less than thirty days.

In the CPRS system, there are multiple areas of the charts from which to obtain information. These include the general list of visits, the progress note section, the consult note section, the discharge summaries section, and the health summaries report section. To ensure that I did not miss any inpatient or outpatient visits, I looked in all areas of the veterans' charts. The health summaries report was the area of the chart that I began collecting data for each veteran, as it contained information on clinical data on visits for

the past four years, outpatient clinical visits, and remote visit summaries for the past twelve years. The second area of the chart that I reviewed was the progress notes section, where I entered in a specific date range under the “signed notes by date range” option. I used this area of the chart to confirm that I did not miss visits from the health summary reports. I also used this area of the chart to read through the progress notes from each individual visit to confirm if the visit was related to mental health, TBI, or another type. Finally, I performed a double check by reviewing the consult notes and discharge summaries.

I de-identified all data entered into the spreadsheet database in the form of codes (unique identification numbers), which represented each veteran, instead of names, in order to protect confidentiality. This de-identified data were stored on a dedicated server that was password protected, and used for research purposes only. All information linking the identification number to the veteran was stored in the Philadelphia VA Medical Center’s secure computer database. All original data from the parent study, as well as data collected via chart reviews, are property of the Philadelphia VA Medical Center. No data were allowed to leave the Philadelphia VA Medical Center’s grounds. Data were managed using SPSS statistical software, version 17. Before beginning the analysis part of my study, I checked the data for completeness, as well as assess for any outliers.

Risks vs. Benefits

While my use of pre-existing data and chart reviews did not involve primary data collection, it is still considered human subjects research, and the primary risk to participants was a breach of confidentiality if the data were not appropriately protected. Methods I used to protect confidentiality are mentioned above. The benefits of my study

were that it increased knowledge about the associations between specific physical, psychological, social, or demographic factors and suicide risk in homeless veterans with TBI. It also provided information to be used my future research aimed at developing interventions to prevent suicide in this population.

Dependent Variable

The dependent variable in my study was suicide risk. For purposes of my study, I am defining suicide risk as feelings of hopelessness, thoughts of being better off dead, thoughts of hurting oneself, thoughts/plans about suicide, or history of a suicide attempt (Sheehan et al., 1998). This definition reflects the questions asked in the MINI International Neuropsychiatric Interview (MINI) to assess risk for suicide. These questions are shown in Table 1 below. The numbers to the left of each question signify the number of points the question was worth when a veteran answered “yes” to that question. At the end of the interview, the points were added up and compared to the scale below (see Figure 2), in order to determine the veteran’s current level of suicide risk.

Table 1

Suicide Risk Questions from MINI

<p>In the past month did you:</p> <p>(0) Suffer any accident? This includes taking too much of your medication accidentally.</p> <p>(0) Plan or intend to hurt yourself in any accident either actively or passively</p> <p>(0) Intend to die as a result of any accident?</p> <p>(1) Feel hopeless?</p> <p>(1) Think that you would be better off dead or wish you were dead?</p> <p>(4) Think about hurting or injuring yourself or have mental images of harming yourself, with at least some intent or awareness that you might die as a result?</p> <p>(6) Think about suicide (killing yourself)?</p> <p>(8) Feel unable to control these impulses?</p> <p>(8) Have a suicide method or plan in mind (e.g. how, when or where)?</p> <p>(8) Intend to follow through on a suicide plan?</p> <p>(8) Intend to die as a result of a suicidal act?</p> <p>(9) Take any active steps to prepare to injure yourself or to prepare for a suicide attempt in which you expected or intended to die?</p> <p>(4) Injure yourself on purpose without intending to kill yourself?</p> <p>(9) Attempt suicide (to kill yourself)?</p> <p>In your lifetime:</p> <p>(4) Did you ever make a suicide attempt (try to kill yourself)?</p>
--

<p>NO</p>	<p>YES</p>	
<p>SUICIDALITY</p> <p>CURRENT</p>		
1-8 points	Low	<input type="checkbox"/>
9-16 points	Moderate	<input type="checkbox"/>
≥ 17 points	High	<input type="checkbox"/>

Figure 2. Suicidality current score from MINI

There were multiple ways to view the dependent variable of suicide risk (see Appendix 5, 6, 9 and 10). Based on clinical and theoretical reasoning, as well as the descriptive statistics found in Appendix 9 and 10, I chose to treat suicide risk as a binary variable, consisting of high risk for suicide vs. no/low/moderate risk for suicide, in order

to get the best understanding possible of what someone at high risk for suicide in this sample looks like.

Independent Variables

For Hypothesis #1. (Examining the associations between suicide risk and physical, psychological, social, and military factors). There were an original 29 independent variables to be considered for hypothesis #1 (see Appendix 7). Data for these variables were obtained through the parent study. After data exploration using descriptive statistics, as well as univariable logistic regressions, these variables were narrowed down to 12 independent variables. This was accomplished by entering each of the 29 original variables into a univariable binary logistic regression model one at a time, then eliminating variables that were not found to be significant at $p = 0.2$ or less from further analysis (see first column in Table 5). Because suicide risk is associated with age and marital status, these variables were included in the statistical models as control variables. Additionally, although race, LOC, and total # of TBIs were not found to be significant in the univariable models, they were of significant theoretical importance and were retained as control variables as well. Thus, the following 15 independent variables were included in initial multivariable models for hypothesis #1:

- 1- Age
- 2- Marital status
- 3- PTSD
- 4- Psychotic disorder
- 5- Substance Abuse
- 6- Dizziness

- 7- Ringing in the ears
- 8- Sleep problems
- 9- Blurred vision
- 10- Poor stress management
- 11- Difficulty with memory/problem solving
- 12- Seizures
- 13- Race
- 14- Total # of TBI
- 15- LOC

For Hypothesis #2. (Examining the associations between suicide risk and utilization of VA healthcare). There were an additional 10 independent variables to be considered for hypothesis #2. (see Appendix 7):

- 1- Inpatient Mental Health Visit (30 days prior to interview)
- 2- Outpatient Mental Health Visit (30 days prior to interview)
- 3- Inpatient TBI Visit (30 days prior to interview)
- 4- Outpatient TBI Visit (30 days prior to interview)
- 5- “Other” Non-TBI/Non-Mental Health inpatient/outpatient visits (30 days prior to interview)
- 6- Inpatient Mental Health Visit (1 year prior to interview)
- 7- Outpatient Mental Health Visit (1 year prior to interview)
- 8- Inpatient TBI Visit (1 year prior to interview)
- 9- Outpatient TBI Visit (1 year prior to interview)

10- “Other” Non-TBI/Non-Mental Health inpatient/outpatient visits (1 year prior to interview).

I obtained the data for these variables through retrospective chart reviews. The four variables related to TBI were dropped due to only one case of a TBI-related visit 30 days prior to the interview, and only 2 cases of a TBI-related visit total for 1 year prior. The other six variables were explored further through univariable binary logistic regression modeling, in the same manner as hypothesis #1, eliminating variables that were not found to be significant at $p = 0.2$ or less (see Table 9). The only variable found to be significant in the univariable regressions was Inpatient Mental Health Visits (1 year prior to interview). I kept the same control variables used in hypothesis #1, which left me with the following six independent variables at the beginning of my analysis for hypothesis #2:

- 1- Age
- 2- Marital status
- 3- Total # of TBI
- 4- LOC
- 5- Race
- 6- Inpatient Mental Health Visit (1 year prior to interview)

Data Analysis Plan for Dissertation Study

De-identified data were entered into the SPSS-17 statistical software to ensure confidentiality, and saved to a confidential research server on a password protected computer in the National Center for Homelessness Among Veterans. Names, addresses, telephone numbers, or any other identifiers were not entered into my study’s database. In the sections that follow, the analytical approach for each specific aim will be described.

Hypothesis #1:

High risk for suicide is significantly associated with certain physical (age, gender, race, TBI severity, repeat TBI), psychological (post-traumatic stress disorder [PTSD], depression, anxiety, bipolar, psychotic disorder), social (marital status, alcohol/drug abuse, religious affiliation, education), and military factors (rank, branch, deployments, combat exposure) when compared to those with low, moderate, or no risk for suicide.

***Aim 1a.** Compute descriptive statistics for specific physical, psychological, social, and military factors (as mentioned above) for the total sample, as well as those with either no/low/moderate risk or high risk for suicide, and determine differences between the groups.*

***Analysis for 1a.** To accomplish this aim, I computed means and standard deviations for continuous variables, and frequencies and percentages for categorical variables. These descriptive statistics were then compared among suicide risk groups by using t-tests for continuous/count variables and chi-squared statistics for categorical variables. I also used analysis of variance (ANOVA) to test for differences among the means between the no-risk group, the low-risk group, and the moderate-risk group, in order to see if grouping them together and comparing them as a whole to the high risk group was feasible (see Table 4).*

***Aim 1b.** Determine the strength of the associations between high risk for suicide and each of the selected physical, psychological, social, and military factors (as mentioned above).*

Analysis for 1b. To accomplish this aim, I used univariable binary logistic regression models to determine the strength of the associations between each independent variable and the binary dependent variable of suicide risk (high risk vs. no risk/low risk/moderate risk). Independent variables that were not significant ($p = 0.2$ or less) were not considered in further analysis (see first column in Table 6).

Aim 1c. *Determine which selected factors: physical, psychological, social, and military factors (as mentioned above) are significantly associated with high risk for suicide in a multivariable statistical model.*

Analysis for 1c. To accomplish this aim, I used multivariable binary logistic regression models, which included all variables significant at $p = 0.2$ or less from the univariable regression models in Aim 1b. I also choose to include the following variables as controls, regardless if they were significant or not in Aim 1b: age, marital status, Total # of TBI, LOC, and race, because I felt that it was theoretically important to control for these variables.

I used a hierarchical method in which the control variables were entered into the analysis before the predictors. I started with a model that included: age, LOC, Total # of TBI, marital status, and race in “block 1”. Then, I added: psychotic disorder, PTSD, substance abuse, dizziness, ringing in ears, fatigue/sleep problems, blurred vision, difficulty managing stress, difficulty with memory/problem solving, and seizures into “block 2”. The model was refitted, retaining the control variables from block 1, no matter their significance and removing the least significant of the block 2 variables each time, until I came to a model where all of the non-control variables were found to be significant. After eight iterations, a final model was tested wherein all the non-control

variables were significant. This resulted in the following variables to be included in the final model for analysis: age, LOC, total # of TBI, marital status, race, PTSD, issues with memory/problem solving, and seizures. (see Table 7).

***Aim 1d.** Determine which interactions within the variables found within the final multivariable model are most significantly associated with high risk for suicide.*

Analysis for 1d. To accomplish this aim, I started by constructing a Pearson's correlation matrix to test for problems associated with collinearity among variables in the final model, using $R^2 > 0.8$ as the cut-off (see Table 8). In addition to testing for collinearity, I also constructed interaction variables in SPSS-17 and plugged them each one at a time into my final model. Based on the literature review, as well as what appeared to be theoretically and clinically appropriate, I selected the following pairs of variables to be tested as part of interaction terms, to investigate their joint effects: total # of TBI and seizures, total # of TBI and LOC, total # of TBI and PTSD, total # of TBI and memory/problem solving, LOC and seizures, LOC and PTSD, LOC and memory/problem solving. These were evaluated one at a time in the final multivariable model.

Violations of Assumptions. There are three major assumptions that were tested for violations, which were normality, homogeneity of the variances, and independence of observations. In each of the two groups, age was not normally distributed. Rather, age was skewed to the left in the high-risk group, and skewed to the right in the no/low/moderate risk group (see Figure 4 and 5). This violation of normality can drastically reduce the power. In terms of variances, they were not equal for each group (see Table 2 and Figure 3). The variance for the high-risk group was 63.49, and the

variance for the no/low/moderate group was 45.84. In addition to this assumption being violated, the sample sizes for each group were extremely different, 11 vs. 92 veterans, which means the p-value should not be trusted. However, SPSS calculates an approximate t-test that does not assume the group variances are equal, and that is the statistic that I reported. Independence of observations was not violated in this study as each homeless veteran who presented to the homeless outreach services at the Philadelphia VA Medical Center or the downtown drop-in center had the same probability of being enrolled in this study.

Table 2

Comparisons of Variance and Normality for Age for No/Low/Moderate Risk vs. High Risk

	Age (High Risk)	Age (No/Low/Moderate Risk)
Mean	48.91	54.3
SD	7.968	6.771
Variance	63.491	45.84
Skewness	-1.499	0.502
Kurtosis	3.666	1.066

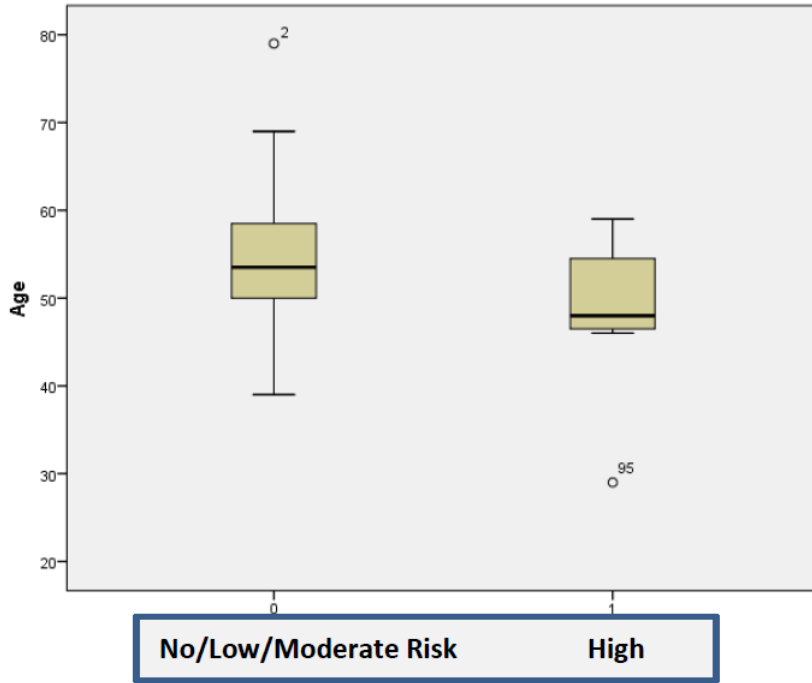


Figure 3. Box plot of differences in means for age between high risk vs. no/low/moderate risk

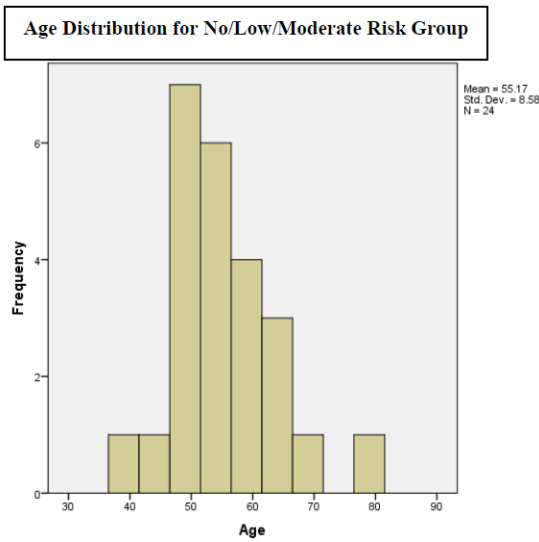


Figure 4. Histogram for distribution of age for no/low/moderate risk group

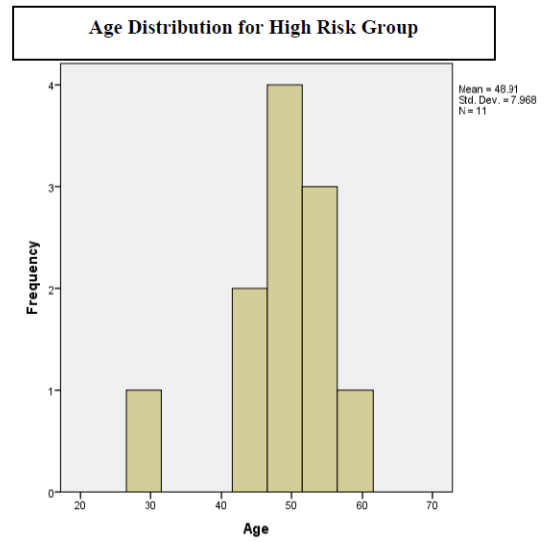


Figure 5. Histogram for distribution of age for high risk group

Hypothesis #2:

Utilization of VA healthcare services (including Mental Health, TBI, or other healthcare visits) is significantly associated with a lowered risk for suicide (no/low/moderate risk), when compared to those at high risk for suicide.

***Aim 2a.** Compute descriptive statistics of the utilization of VA mental health services, the utilization of VA TBI services, and the utilization of all other VA healthcare services, for the total sample, as well as those with either no/low/moderate risk or high risk for suicide, and determine differences between the groups.*

***Analysis for 2a.** To accomplish this aim, I started by describing the frequencies for each type of utilization mentioned above, and also checked for significant differences between the no/low/moderate risk vs. high risk for suicide groups. To look at the variables in more than one way, I computed the mean, standard deviation and t-tests for the visits as continuous/count variables, which represented the number of visits per each veteran. Then, I computed the percentages and chi-squared statistics for the visits as categorical variables, which represented the percentage of veterans who utilized these services (see Table 5). I chose to look at these variables in two ways, in order to see how many veterans in this sample actually utilized these services, and to what extent. However, I used the continuous form of these variables for analysis in my regression models.*

***Aim 2b.** Determine the strength of the associations between suicide risk and the utilization of VA mental health services, the utilization of VA TBI services, and the utilization of all other VA healthcare services, in those with no/low/moderate risk vs. high risk for suicide.*

Analysis for 2b. To accomplish this aim, I used univariable binary logistic regression models to determine the strength of the associations between each type of visit and the binary dependent variable of suicide risk (high risk vs. no risk/low risk/moderate risk). Visit variables that were not significant ($p = 0.2$ or less) were not considered for further analysis (see Table 9).

Aim 2c. *Determine if utilization of VA mental health services, the utilization of VA TBI services, or the utilization of any VA healthcare services are significantly associated with either no/low/moderate risk or high risk for suicide in a multivariable statistical model, when controlling for selected physical, psychological, social, and military factors.*

Analysis for 2c. To accomplish this aim, I used multivariable binary logistic regression models and included the variables significant at $p = 0.2$ or less from Aim 2b, as well as the control variables from hypothesis #1. The only independent variable found to be significant from Aim 2b was Inpatient Mental Health Visits (1 year prior to the interview).

Using a hierarchical method again, I added age, LOC, total # of TBI, marital status, and race into “block 1” as control variables. Then, I added Inpatient Mental Health Visits (1 year prior to the interview) into block 2. The final model for hypothesis #2 included the following variables: age, LOC, total # of TBI, marital status, race, and Inpatient Mental Health Visits (1 year prior to the interview) (see Table 10).

Violations of Assumptions. There are three major assumptions that were tested for violations, which were normality, homogeneity of the variances, and independence of observations. In each of the two groups, the variable of inpatient mental health visits at one year was not normally distributed, instead they were both skewed to the right (see

Figures 6-8). In terms of variances, they were not equal for each group (see Table 3). The variance for the high risk group was 0.27, and the variance for the no/low/moderate group was 7.491. Although this assumption is violated, as stated above, SPSS calculates an approximate t-test that does not assume the group variances are equal, and that is the statistic that I reported. Also, independence of observations was not violated in this study, as each veteran had the same probability of being chosen for this study.

Table 3

Comparisons of Variance and Normality for Inpatient Mental Health Visits at One Year Prior to Interview for No/Low/Moderate Risk vs. High Risk

	Inpatient MH- 1year (High Risk)	Inpatient MH- 1year (No/Low/Moderate Risk)
Mean	0.16	1
SD	0.519	2.737
Variance	0.27	7.491
Skewness	4.055	1.386
Kurtosis	18.506	0.887

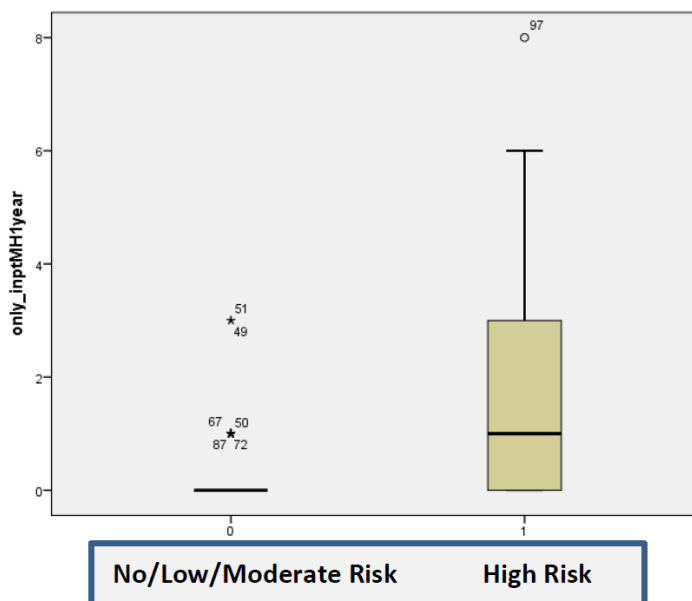


Figure 6. Box plot for inpatient mental health visits at 1 year prior to interview for no/low/moderate risk vs. high risk

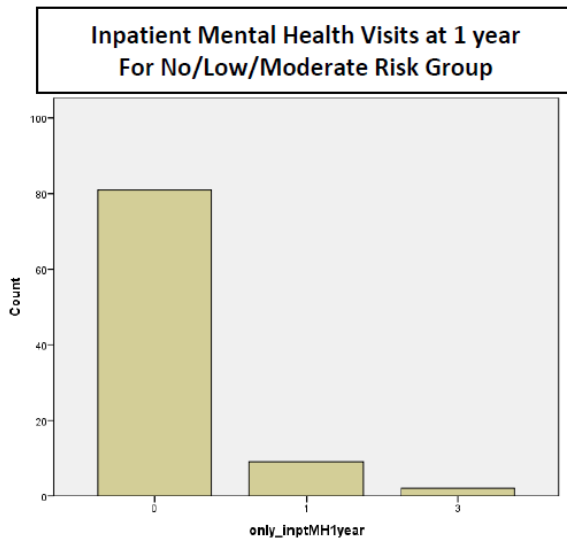


Figure 7. Bar graph for distribution of inpatient mental health visits at 1 year prior to interview for no/low/moderate risk group

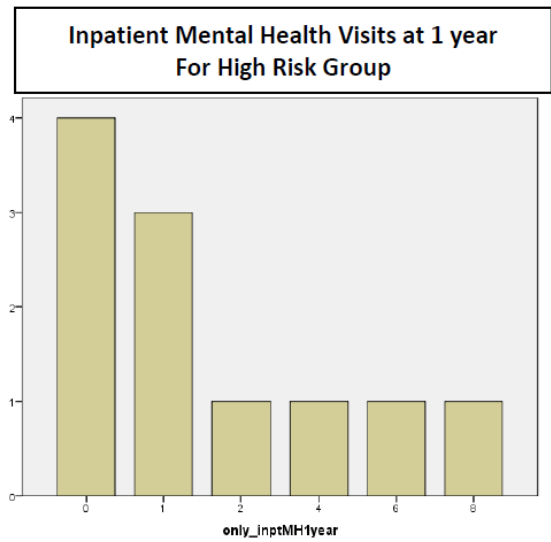


Figure 8. Bar graph for distribution of inpatient mental health visits at 1 year prior to interview for high risk group

CHAPTER FOUR

Introduction

The purpose of this study was to: 1) describe the associations among suicide risk and specific physical, psychological, social, and military factors; and 2) to describe the associations among suicide risk and the utilization of Veterans Affairs (VA) Mental Health and TBI outpatient and inpatient services, using pre-existing data from the Philadelphia VA, as well as performing retrospective chart reviews. In this chapter, I will first provide an overview of the descriptive statistics, and a comparison of the high risk for suicide vs. no, low or moderate risk groups. Then, I will provide the results meeting the study aims.

Descriptive Statistics for the Total Sample

For the total sample of 103 veterans, all were homeless and all screened positive for a history of TBI on both the Ohio State University TBI Identification Method (OSU TBI-ID) and the TBI-4 screening tools. All were male, between the ages of 29-79 years old ($m = 53.73$, $sd = 7.066$). The majority (77.7%) were Catholic/Christians, 52.4% were at some point married (although only one veteran was currently still married), and most (82.5%) were African American. Depression was reported in 17.5% of the veterans, anxiety in 9.7%, bipolar disorder in 2.9%, psychotic disorder in 7.8%, and post-traumatic stress disorder (PTSD) in 21.4%. Alcohol abuse was reported in 32% of the veterans, and substance (drug) abuse was reported in 50.5%.

The sample was made up of 57.3% Army veterans, 20.4% Navy veterans, 12.6% Marine veterans, 8.7% Air Force veterans, and 1% Coast Guard veterans. The majority (84.5%) had an E1-E4 military rank. Of these, 37.9% had been deployed at least once,

and 14.6% had combat experience. The majority (63.1%) of veterans had three or more TBIs, with 82.5% reporting an accompanying loss of consciousness (LOC) with their TBI (see Table 4).

Within the total sample, 81.6% utilized outpatient mental health services, 17.5% utilized inpatient mental health services, and 91.3% utilized some form of other (non-TBI, non-mental health) services at the VA within one year prior to enrolling in this study. Within thirty days of enrollment, 57.3% of the veterans utilized outpatient mental health services, 2.9% utilized inpatient mental health services, and 67% utilized some form of other (non-TBI, non-mental health) services at the VA (see Table 5).

Table 4

Frequencies and Chi-Square Statistics for Hypothesis #1

	Total Sample n= 103	No Risk, Low Risk, or Moderate Risk n= 92	High Risk n= 11	High Risk vs. No/Low/Mod Risk ^Chi-squared {p-value} ☑t-tests	No risk vs. Low risk vs. Mod Risk ^Chi-squared {p-value} ✍ANOVA
Total # of TBI					
One TBI	20 (19.4%)	19 (20.7%)	1 (9.1%)	1.62^{0.805}	14.12^{0.079}
Two TBI	18 (17.5%)	16 (17.4%)	2 (18.2%)		
Three TBI	26 (25.2%)	22 (23.9%)	4 (36.4%)		
Four TBI	15 (14.6%)	14 (15.2%)	1 (9.1%)		
Five or more TBI	24 (23.3%)	21 (22.8%)	3 (27.3%)		
Min	1	1	1		
Max	8	8	6		
Mean	3.15	3.1	3.36	☑ -0.52 {0.601}	✍ 0.67 {0.567}
SD	1.58	1.597	1.50		
Age					
29-40	4 (3.9%)	3 (3.3%)	1 (9.1%)	5.70^{0.127}	0.91^{0.989}
41-50	31 (30.1%)	25 (27.2%)	6 (54.5%)		
51-60	52 (50.5%)	48 (52.2%)	4 (36.4%)		
61-79	16 (15.5%)	16 (17.4%)	0		
Min	29	39	29		
Max	79	79	59		
Mean	53.73	54.3	48.91	☑ 2.45 {0.016}	✍ 2.30 {0.082}
SD	7.06	6.77	7.96		
Race					
White	18 (17.5%)	16 (17.4%)	2 (18.2%)	0.01^{0.948}	1.43^{0.487}
Non-white	85 (82.5%)	76 (82.6%)	9 (81.8%)		

Educational Level					
No High School	10 (9.7%)	7 (7.6%)	3 (27.3%)	5.9 [^] {0.117}	6.50 [^] {0.369}
High School/GED	49 (47.6%)	46 (50%)	3 (27.3%)		
Some College	26 (25.2%)	24 (26.1%)	2 (18.2%)		
Associates/Bachelor	18 (17.5%)	15 (16.3%)	3 (27.3%)		
Marital Status					
Never Married	49 (47.6%)	45 (48.9%)	3 (27.3%)	2.03 [^] {0.154}	2.32 [^] {0.313}
Ever Married	54 (52.4%)	47 (51.1%)	8 (72.7%)		
Religious Affiliation					
Christian	60 (58.3%)	52 (56.5%)	8 (72.7%)	4.76 [^] {0.19}	3.41 [^] {0.756}
Catholic	20 (19.4%)	20 (21.7%)	0		
Other Religion	7 (6.8%)	7 (7.6%)	0		
None/Agnostic	16 (15.5%)	13 (14.1%)	3 (27.3%)		
Branch of Military					
Army	59 (57.3%)	53 (57.6%)	6 (54.5%)	0.03 [^] {0.846}	0.15 [^] {0.927}
Non-Army	44 (42.7%)	39 (42.4%)	5 (45.5)		
Rank					
E1-E2	28 (27.2%)	26 (28.3%)	2 (18.2%)	1.40 [^] {0.704}	1.84 [^] {0.764}
E3-E4	59 (57.3%)	50 (54.3%)	8 (72.7%)		
E5-E6	16 (15.5%)	16 (17.4%)	1 (9.1%)		
Combat Experience					
No	88 (85.4%)	79 (85.9%)	9 (81.8%)	0.13 [^] {0.719}	0.09 [^] {0.955}
Yes	15 (14.6%)	13 (14.1%)	2 (18.2%)		
Deployment					
No	64 (62.1%)	57 (62%)	7 (63.6%)	0.01 [^] {0.914}	1.30 [^] {0.521}
Yes	39 (37.9%)	35 (38%)	4 (36.4%)		
Depression					
No	85 (85.2%)	77 (83.7%)	8 (72.7%)	0.82 [^] {0.365}	7.67 [^] {0.022}
Yes	18 (17.5%)	15 (15.3%)	3 (27.3%)		
Psychotic Disorder					
No	95 (92.2%)	86 (93.5%)	9 (81.8%)	1.86 [^] {0.172}	2.92 [^] {0.231}
Yes	8 (7.8%)	6 (6.5%)	2 (18.2%)		
Anxiety Disorder					
No	93 (90.3%)	84 (91.3%)	9 (81.8%)	1.01 [^] {0.315}	1.17 [^] {0.556}
Yes	10 (9.7%)	8 (8.7%)	2 (18.2%)		
Bipolar I or II					
No	100 (97.1)	89 (96.7%)	11 (100%)	0.36 [^] {0.543}	1.50 [^] {0.472}
Yes	3 (2.9%)	3 (3.3%)	0		
PTSD					
No	81 (78.6%)	77 (83.7%)	4 (36.4%)	13.1 [^] {0.000}	2.48 [^] {0.288}
Yes	22 (21.4%)	15 (16.3%)	7 (63.6%)		
Alcohol Abuse					
No	70 (68%)	63 (68.5%)	7 (63.6%)	0.11 [^] {0.745}	8.21 [^] {0.016}
Yes	33 (32%)	29 (31.5%)	4 (36.4%)		
Drug Abuse					
No	51 (49.5%)	48 (52.2%)	3 (27.3%)	2.43 [^] {0.118}	4.58 [^] {0.101}
Yes	52 (50.5%)	44 (47.8%)	8 (72.7%)		
LOC with TBI					
No	18 (17.5%)	16 (17.4%)	2 (18.2%)	0.01 [^] {0.948}	1.43 [^] {0.487}
Yes	85 (82.5%)	76 (82.6%)	9 (81.8%)		
Dazed/Confused without LOC					
No	27 (26.2%)	25 (27.2%)	3 (27.3%)	0.23 [^] {0.625}	2.06 [^] {0.355}
Yes	75 (72.8%)	67 (72.8%)	8 (72.7%)		
Amnesia without LOC					
No	73 (70.9%)	66 (71.7%)	7 (63.6%)	0.31 [^] {0.576}	2.15 [^] {0.034}
Yes	30 (29.1%)	26 (28.3%)	4 (36.4%)		
Headache					
No	26 (25.2%)	23 (25%)	3 (27.3%)	0.02 [^] {0.87}	2.24 [^] {0.326}
Yes	77 (74.8%)	69 (75%)	8 (72.7%)		

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Dizziness						
No	38 (36.9%)	36 (39.1%)	2 (18.2%)	1.85 [^] {0.174}	3.08 [^] {0.214}	
Yes	65 (63.1%)	56 (60.9%)	9 (81.8%)			
Ring in Ears						
No	56 (54.4%)	53 (57.6%)	3 (27.3%)	3.64 [^] {0.056}	0.24 [^] {0.887}	
Yes	47 (46.6%)	39 (42.4%)	8 (72.7%)			
Sleep Problems						
No	55 (53.4%)	52 (56.5%)	3 (27.3%)	3.37 [^] {0.066}	5.25 [^] {0.072}	
Yes	48 (46.6%)	40 (43.5%)	8 (72.7%)			
Blurred Vision						
No	52 (50.5%)	50 (54.3%)	2 (18.2%)	5.141 [^] {0.023}	1.986 [^] {0.37}	
Yes	51 (49.5%)	42 (45.7%)	9 (81.8%)			
Temper/Irritability						
No	69 (67%)	63 (68.5%)	6 (54.5%)	0.863 [^] {0.353}	5.865 [^] {0.053}	
Yes	34 (33%)	29 (31.5%)	5 (45.5%)			
Managing Stress						
No	71 (68.9%)	67 (72.8%)	4 (36.4%)	6.1 [^] {0.014}	3.027 [^] {0.22}	
Yes	32 (31.1%)	25 (27.2%)	7 (63.6%)			
Memory/Problem Solving						
No	60 (58.3%)	58 (63%)	2 (18.2%)	8.13 [^] {0.004}	2.16 [^] {0.339}	
Yes	43 (41.7%)	34 (37%)	9 (81.8%)			
Seizures						
No	95 (92.2%)	88 (95.7%)	7 (63.6%)	14.05 [^] {0.000}	2.37 [^] {0.304}	
Yes	8 (7.8%)	4 (4.3%)	4 (36.4%)			
<hr/>						

TBI: traumatic brain injury

SD: standard deviation

PTSD: post-traumatic stress disorder

LOC: loss of consciousness

ANOVA: analysis of the variance

Table 5

Frequencies and Chi-Square Statistics for Hypothesis #2

	Total Sample	No Risk, Low risk, or Moderate Risk	High Risk	High Risk vs. No/Low/Mod Risk	No Risk vs. Low Risk vs. Mod. Risk
	n= 103	n= 79	n= 11	<input checked="" type="checkbox"/> t-tests ^Chi-squared {p-value}	<input checked="" type="checkbox"/> ANOVA ^Chi-squared {p-value}
Outpatient Mental Health Visits (1 year prior)					
No	19 (18.4%)	17 (18.5%)	1 (9.1%)	0.6^ {0.438}	1.48^ {0.477}
Yes	84 (81.6%)	75 (81.5%)	10 (90.9%)		
	Min- 0	Min- 0	Min- 0		
	Max- 148	Max- 148	Max- 46		
	Mean- 25.29	Mean- 15.33	Mean- 19.64	<input checked="" type="checkbox"/> --0.73 {0.47}	<input checked="" type="checkbox"/> 0.21 {0.811}
	SD- 15.79	SD- 26.13	SD- 17.14		
Inpatient Mental Health Visits (1 year prior)					
No	85 (82.5%)	81 (88%)	4 (36.4%)	18.19^ {0.000}	0.93^ {0.626}
Yes	18 (17.5%)	11 (12%)	7 (63.6%)		
	Min- 0	Min- 0	Min- 0		
	Max- 8	Max- 3	Max- 8		
	Mean- 0.37	Mean- 0.16	Mean- 2.09	<input checked="" type="checkbox"/> --2.33 {0.042}	<input checked="" type="checkbox"/> 0.00 {0.999}
	SD- 1.15	SD- 0.51	SD- 2.73		
Other (non-TBI, non-Mental Health) Visits (1 year prior)					
No	9 (8.7%)	8 (8.7%)	1 (9.1%)	0.00^ {0.965}	0.65^ {0.722}
Yes	94 (91.3%)	84 (91.3%)	10 (90.9%)		
	Min- 0	Min- 0	Min- 0		
	Max- 57	Max- 57	Max- 43		
	Mean-11.67	Mean-11.48	Mean-13.27	<input checked="" type="checkbox"/> --0.44 {0.664}	<input checked="" type="checkbox"/> 0.08 {0.918}
	SD-11.44	SD- 11.33	SD- 12.76		
Outpatient Mental Health Visits (30 days prior)					
No	44 (42.7%)	41 (44.6%)	3 (27.3%)	1.2^ {0.273}	0.16^ {0.922}
Yes	59 (57.3%)	51 (55.4%)	8 (72.7%)		
	Min- 0	Min- 0	Min- 0		
	Max- 31	Max- 31	Max- 5		
	Mean- 2.5	Mean- 2.57	Mean- 1.91	<input checked="" type="checkbox"/> 0.89 {0.374}	<input checked="" type="checkbox"/> 0.64 {0.526}
	SD- 5.21	SD- 5.49	SD- 1.51		
Inpatient Mental Health Visits (30 days prior)					
No	100 (97.1%)	92 (100%)	8 (72.7%)	25.84^ {0.000}	n/a
Yes	3 (2.9%)	0	3 (27.3%)		
	Min- 0	Min- 0	Min- 0		
	Max- 2	Max- 0	Max- 2		
	Mean- 0.04	Mean- 0	Mean- 0.36	<input type="checkbox"/> --1.78 {0.104}	n/a
	SD- 0.23	SD- 0	SD- 0.67		
Other (non-TBI, non-Mental Health) Visits (30 days prior)					
No	34 (33%)	28 (30.4%)	5 (45.5%)	1.01^ {0.313}	1.16^ {0.56}
Yes	69 (67%)	64 (69.6%)	6 (54.5%)		
	Min- 0	Min- 0	Min- 0		
	Max- 29	Max- 29	Max- 10		
	Mean- 2.22	Mean- 2.25	Mean- 2	<input checked="" type="checkbox"/> 0.25 {0.803}	<input checked="" type="checkbox"/> 0.65 {0.525}
	SD- 3.56	SD- 3.63	SD- 3		

High-risk vs. No/Low/Moderate-risk

The majority (63.6%) of those at high risk for suicide were being between the ages of 29-50 years old, whereas almost 70% of those with no/low/moderate risk for suicide that were over the age of 50. There were no significant differences among the groups in terms of military branch, combat experience or deployment history. The greatest differences between the high risk and other groups were observed among the psychological variables. For instance, 63.6% of those with high risk for suicide reported PTSD, compared to only 16.3% of those with no/low/moderate risk for suicide ($p < 0.0001$). Other examples included psychotic disorder (18.2% vs. 6.5%, $p = 0.172$), depression (27.3% vs. 15.3%, $p = 0.365$), anxiety (18.2% vs. 8.7%, $p = 0.315$), and substance abuse (72.7% vs. 47.8%, $p = 0.118$).

There were also differences in frequencies of TBI-related symptoms noted between the high risk for suicide group and the no/low/moderate risk for suicide group. Rates were greatest for all symptoms, except headache, in those with high risk for suicide. For example, differences included dizziness (81.8% vs. 60.9%, $p = 0.174$), ringing in ears (72.7% vs. 42.4%, $p = 0.056$), fatigue/sleep problems (72.7% vs. 43.5%, $p = 0.066$), blurred vision (81.8% vs. 45.7%, $p = 0.023$), temper/irritability (45.5% vs. 31.5%, $p = 0.353$), difficulty managing stress (63.6% vs. 27.2%, $p = 0.014$), issues with memory/problem solving (81.8% vs. 37%, $p = 0.004$), and seizures (36.4% vs. 4.3%, $p < 0.0001$).

Within one year of enrollment in this study, those with high risk for suicide used VA inpatient mental health services more frequently (63.6%), compared to those with

no/low/moderate risk (12%) ($p < 0.0001$). Additionally, within thirty days of enrollment, 27.3% of those at high risk for suicide utilized VA inpatient mental health services, compared to none of those with no/low/moderate risk for suicide ($p < 0.0001$).

Data Analysis and Results

The remainder of this section presents the results of the data analysis for each hypothesis.

Hypothesis #1 addressed the association between suicide risk and physical, psychological, social, and military factors (please see specific aims).

Aim #1a: Comparisons of the High Risk vs. No/Low/Moderate Risk Groups

Pearson's Chi-Squared Tests. These tests were performed on all of the categorical variables. Using $p = 0.05$ as the cut-off for statistical significance, the following variables were found to significantly different between these two groups: PTSD ($p < 0.001$), blurred vision ($p = 0.023$), managing stress ($p = 0.014$), difficulty with memory/problem solving skills ($p = 0.004$), and seizures ($p < 0.0001$).

Independent Sample T-Tests. These tests were performed on the following continuous variables: total # of TBI, and age. The total # of TBIs were not found to have statistically significant differences in their means, when comparing high risk for suicide vs. no/low/moderate risk for suicide ($p = 0.601$). However, the average age in the no/low/moderate risk group was found to be significantly greater than the average age in the high risk for suicide group ($p = 0.016$).

Aim #1a: Comparisons of the No Risk vs. Low Risk vs. Moderate Risk Groups

Pearson's Chi-Squared Tests. Using $p = 0.05$ as the cut-off for statistical significance, the following variables were found to have statistical differences among their means between groups: depression ($p = 0.022$), alcohol abuse ($p = 0.016$), and amnesia without LOC ($p = 0.034$). The moderate and low risk for suicide groups had greater proportions of each of these conditions, compared to those with no risk for suicide.

Analysis of the Variance (ANOVA). Based on results from the ANOVA, there were no significant differences noted for Total # of TBIs or age between these three groups.

Aim #1b: Univariable Binary Logistic Regression. Variables found to have a strong association ($p > 0.2$) with high risk for suicide included: age ($OR = 0.89, p = 0.022$), marital status ($OR = 0.39, p = 0.186$), psychotic disorder ($OR = 0.31, p = 0.192$), PTSD ($OR = 0.11, p = 0.001$), substance abuse ($OR = 0.34, p = 0.132$), dizziness ($OR = 0.34, p = 0.19$), ringing in ears ($OR = 0.27, p = 0.069$), fatigue/sleep problems ($OR = 0.28, p = 0.079$), blurred vision ($OR = 0.18, p = 0.038$), difficulty managing stress ($OR = 0.21, p = 0.021$), difficulty with memory/problem solving ($OR = 0.13, p = 0.012$), and seizures ($OR = 0.08, p = 0.002$). These variables were added into the multivariable binary logistic regression model, in addition to the control variables (Total # of TBI, LOC and race) as described in my analysis plan (see Table 5).

Aim #1c: Multivariable Binary Logistic Regression. Variables found to have a strong association ($p > 0.05$) with high risk for suicide included: marital status ($OR = 0.11, p = 0.044$), PTSD ($OR = 0.12, p = 0.04$), difficulty with memory/problem solving ($OR = 0.11, p = 0.047$), and seizures ($OR = 0.05, p = 0.031$). (see Table 6 and 7).

Table 6

Univariable and Multivariable Regression Models for Hypothesis #1

	Univariable Model			Multivariable Model		
	OR	95% CI	P-value	OR	95% CI	P-value
Total # of TBI	1.11	0.75 – 1.63	0.597	1.02	0.52 – 2.01	0.947
Age	0.89	0.81 – 0.98	**0.022	0.89	0.76 – 1.04	0.157
Race	1.05	0.20 – 5.35	0.948	0.51	0.03 – 8.65	0.644
Educational Level	0.93	0.45 – 1.89	0.843	--	--	--
Marital Status	0.39	0.09 – 1.57	*0.186	8.87	1.06 – 73.85	*0.044
Religious Affiliation	1.02	0.58 – 1.78	0.944	--	--	--
Branch of Military	0.88	0.21 – 3.1	0.846	--	--	--
Rank	1.07	0.40 – 2.82	0.889	--	--	--
Combat Experience	0.74	0.14 – 3.82	0.72	--	--	--
Deployment	1.07	0.29 – 3.93	0.914	--	--	--
Depression	0.51	0.12 – 2.18	0.372	--	--	--
Psychotic Disorder	0.31	0.05 – 1.79	*0.192	--	--	--
Anxiety	0.42	0.07 – 2.33	0.327	--	--	--
Bipolar I or II	n/a	n/a	n/a	--	--	--
PTSD	0.11	0.02 – 0.42	**0.001	8.02	1.1 – 58.53	*0.04
Alcohol Abuse/Dependence	0.81	0.21 – 2.97	0.745	--	--	--
Substance Abuse/Dependence	0.34	0.08 – 1.37	*0.132	--	--	--
LOC with TBI	1.05	0.21 – 5.35	0.948	0.14	0.01 – 2.07	0.157
Dazed/Confused without LOC	1.01	0.24 – 4.09	0.994	--	--	--
Amnesia without LOC	0.68	0.18 – 2.55	0.578	--	--	--
TBI-related Symptoms						
Headache	1.12	0.27 – 4.6	0.87	--	--	--
Dizziness	0.34	0.07 – 1.69	*0.19	--	--	--
Ringing in Ears	0.27	0.06 – 1.1	*0.069	--	--	--
Fatigue/Sleep Problems	0.28	0.07 – 1.15	*0.079	--	--	--
Blurred Vision	0.18	0.03 – 0.91	**0.038	--	--	--
Temper/Irritability	0.55	0.15 – 1.95	0.358	--	--	--
Managing Stress	0.21	0.05 – 0.79	**0.021	--	--	--
Memory/Problem Solving	0.13	0.02 – 0.63	**0.012	8.42	1.02 – 69.28	*0.047
Seizures	0.08	0.01 – 0.38	**0.00	17.26	1.3 – 228.81	*0.031

p-value* ≤ 0.2 (only in univariate model)*p-value* ≤ 0.05

Table 7

SPSS output for Final Model for Hypothesis #1

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
Age	-.11	.07	2.01	1	.157	.89	.76	1.04
LOC(1)	-1.91	1.34	2.01	1	.157	.14	.01	2.07
Total # of TBI	.02	.34	.00	1	.947	1.02	.52	2.01
Marital status(1)	2.18	1.08	4.07	1	.044	8.87	1.06	73.85
Race(1)	-.66	1.44	.21	1	.644	.51	.03	8.65
PTSD(1)	2.08	1.01	4.21	1	.040	8.02	1.10	58.53
Memory/Problem Solving(1)	2.13	1.07	3.92	1	.047	8.42	1.02	69.28
Seizures(1)	2.84	1.31	4.66	1	.031	17.26	1.3	228.81
Constant	1.66	4.11	.16	1	.686	5.28		

*Pseudo R*² = 0.4366

Statistical Inferences. There were strong associations found between high risk for suicide and marital status, PTSD, issues with memory/problem solving, and seizures. Compared to those that were never married, those who were at some point in their lives married were found to have an 8.87 increased odds of being high risk for suicide (as opposed to no risk, low risk, or moderate risk), when controlling for age, LOC, total number of TBI, race, PTSD, memory/problem solving issues, and seizures ($p= 0.044$). Compared to those without PTSD, those with current PTSD were found to be at an 8 times greater odds of being at high risk for suicide (compared to no risk, low risk, or moderate risk), when controlling for age, LOC, total # of TBI, marital status, race, memory/problem solving issues, and seizures ($p= 0.04$).

Those who had issues with memory or problem solving after their TBI were found to have an 8.42 increased odds of being high risk for suicide (compared to no risk, low risk, or moderate risk), when compared to those without these issues, and controlling

for age, LOC, total # of TBI, marital status, race, PTSD, and seizures ($p= 0.047$).

Additionally, compared to those who did not have a seizure after their TBI, those who did have at least one seizure were found to have a 17.26 greater likelihood of being in the high risk for suicide group (compared to no risk, low risk, or moderate risk), when compared to those without these issues, and controlling for age, LOC, total # of TBI, marital status, race, PTSD, and memory/problem solving issues ($p= 0.031$).

The Null Hypothesis. Based on the results from the final multivariable binary logistic regression model, we can reject the null hypothesis that there is no association between these factors and suicide risk. There appear to be four factors in my study that were significantly associated with high risk for suicide in this group of homeless veterans with a history of TBI. These are marital status, PTSD, issues with memory/problem solving, and seizures, although, these results are accompanied by several limitations (see below).

Aim #1d: Pearson's Correlation Coefficients. Using an R-squared value of > 0.8 as the cut-off for statistical significance, there were no variables found to be significantly correlated (see Table 8).

Table 8

SPSS Output for Correlation Matrix

		Age	LOC	seizures	memory	Total_TBI	PTSD	Married	Race
Age	Pearson Correlation	1	-.112	-.102	-.060	-.093	-.239	.177	.033
LOC	Pearson Correlation	-.112	1	.134	.182	.410	.053	-.071	.192
seizures	Pearson Correlation	-.102	.134	1	.196	.115	.114	-.020	.038
memory	Pearson Correlation	-.060	.182	.196	1	.345	.279	-.077	.234
Total_TBI	Pearson Correlation	-.093	.410	.115	.345	1	.124	-.036	.037
PTSD	Pearson Correlation	-.239	.053	.114	.279	.124	1	.012	.177
Married	Pearson Correlation	.177	-.071	-.020	-.077	-.036	.012	1	-.020
Race	Pearson Correlation	.033	.192	.038	.234	.037	.177	-.020	1

Aim #1d: Interaction Variables. The following variables were not found to have a significant correlation when entered into the final model as interaction variables: total # of TBI and seizures, total # of TBI and LOC, total # of TBI and PTSD, total # of TBI and memory/problem solving, LOC and seizures, LOC and PTSD, LOC and memory/problem solving. These interactions were not included in any further analysis.

Hypothesis #2 explored the association between suicide risk and utilization of VA healthcare (please see specific aims).

Aim #2a: Comparisons of the High Risk vs. No/Low/Moderate Risk Groups

Independent Sample T-Tests. Viewing the utilization variables as continuous, I calculated t-tests to assess for differences between groups. The only statistically significant difference in means between the two groups was found on the variable of inpatient mental health visits one year prior to the interview. The average number of

inpatient mental health visits in the no/low/moderate risk group was found to be significantly lower than the average number of mental health visits in the high risk group at one year prior to the start of the study ($p = 0.042$).

Aim #2a: Comparisons of the No Risk vs. Low Risk vs. Moderate Risk

Groups

Analysis of the Variance (ANOVA). Based on results from the ANOVA, there were no significant differences noted for any of the utilization variables between these three groups.

Aim #2b: Univariable Binary Logistic Regression. Variables found to have a strong association ($p > 0.2$) with high risk for suicide included only: inpatient mental health visits one year prior to the interview ($OR = 2.85, p = 0.003$). (see Table 9). The other variables were eliminated from further analysis.

Table 9

Univariable Regression Models for Hypothesis #2

	Univariable Model		
	OR	95% CI	P-value
Outpatient Mental Health Visits (1 year prior)	1.01	0.98—1.02	0.594
Inpatient Mental Health Visits (1 year prior)	2.85	1.42—5.71	*0.003
Other (non-TBI, non-Mental Health) Visits (1 year prior)	1.01	0.96—1.06	0.623
Outpatient Mental Health Visits (30 days prior)	0.97	0.83—1.13	0.695
Inpatient Mental Health Visits (30 days prior)	n/a	n/a	n/a
Other (non-TBI, non-Mental Health) Visits (30 days prior)	0.97	0.79—1.2	0.826

* $p\text{-value} \leq 0.05$

Aim #2c: Multivariable Binary Logistic Regression. Variables found to have a strong association ($p > 0.05$) with high risk for suicide included: age ($OR = 0.83$, $p = 0.013$), and inpatient mental health visits one year prior to the interview ($OR = 2.85$, $p = 0.009$). (see Table 10).

Table 10

SPSS Output for Final Model for Hypothesis #2

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Age	-.18	.07	6.22	1	.013	.83	.72	.96
LOC(1)	-1.17	1.21	.94	1	.331	.31	.02	3.28
Total # of TBI	.15	.32	.23	1	.630	1.16	.62	2.2
Step 1 ^a Marital status(1)	1.38	.92	2.26	1	.132	4.04	.65	24.95
Race(1)	.30	1.08	.08	1	.777	1.35	.16	11.34
InpatientMH-1 year	1.04	.41	6.79	1	.009	2.85	1.29	6.28
Constant	5.72	3.32	2.96	1	.085	306.91		

Pseudo R² = 0.3761

Statistical Inferences. In hypothesis #2, there were strong associations found between high risk suicide and Age and Inpatient Mental Health Visits One Year Prior to Interview. For every year increase in age, the likelihood of being at high risk for suicide decreased by 0.83, compared to no risk, low risk, or moderate risk, when controlling for LOC, total # of TBI, marital status, race, and inpatient mental health visits for one year prior to the interview ($p = 0.013$). Also, for each additional inpatient visit for mental health, the odds of being high risk for suicide increased by 2.85, when controlling for LOC, total # of TBI, marital status, race, and age ($p = 0.009$).

The Null Hypothesis. Based on the results from the final multivariable binary logistic regression model, we cannot reject the null hypothesis. Although the data showed that utilization of all types of VA healthcare services (with the exception of inpatient

mental health at one year) were associated with a lowered risk for suicide (no/low/moderate risk), when compared to those at high risk for suicide, those associations were not found to be statistically significant in the regression models. There was however a significant association between inpatient mental health visits and high risk for suicide.

Post Hoc Power Analysis

Given that there was no primary predictor variable in my study from which to estimate power, I conducted a post-hoc power analysis on the final logistic regression model used in hypothesis #1 to determine whether there was sufficient power for the analysis that was conducted. I used the Power Analysis and Sample Size (PASS-13) computer program to perform my calculations (Hsieh, Block & Larsen, 1998). I performed these power calculations based on a sample size of 103, and the specific variables that were found to be significant in the final model from hypothesis #1: marital status, PTSD, difficulty with memory/problem solving, and seizures. I entered in each variable one at a time into PASS, using these specifications: $R^2 = 0.2$, two-tailed hypothesis, OR reflecting that of the specific predictor variable, alpha 0.05, $N = 103$, the baseline probability that ($Y = 1$) at 0.05, and I changed the % N where $x = 1$ to reflect the % of the sample that answered “yes” on each of these four predictor variables. After performing these four power analyses, it was determined that the power for my study was between 0.77—0.89 (see Table 11).

Table 11

Power Analysis

Variable	Power	N	%N (x=1)	P0	P1	Odds Ratio	R ²	Alpha	Beta
Marital Status	0.89234	103	52.4%	0.05	0.318	8.872	0.2	0.05	103
PTSD	0.77949	103	21.4%	0.05	0.297	8.872	0.2	0.05	214
Memory/Problem Solving	0.87415	103	41.7%	0.05	0.307	8.424	0.2	0.05	120
Seizure	0.84628	103	7.8%	0.05	0.476	17.268	0.2	0.05	121

Summary of Results

When comparing those with high risk for suicide to those with no, low, moderate risk for suicide, the greatest differences in frequencies were found among the psychological and TBI-related variables. The following psychological variables were observed to be greater in those with high risk compared to those with no, low, or moderate risk: PTSD, psychotic disorder, depression, anxiety, and substance disorder. The following TBI-related symptoms were also observed to be greater in the high risk group: dizziness, ringing in the ears, fatigue/sleep problems, blurred vision, temper/irritability, difficulty managing stress, issues with memory/problem solving, and seizures. Those with high risk for suicide also had greater frequencies of inpatient mental health admissions within both one year and thirty days from enrollment in the parent study, and also appeared to be younger, when compared to the no, low, or moderate risk group.

When assessing for differences in means among the variables between the high risk for suicide group and the no, low, or moderate risk group, using chi-square statistics and t-tests, statistical differences were noted among the following: age, PTSD, inpatient mental health admission at both one year and thirty days from enrollment in the parent study, and the following TBI-related symptoms: blurred vision, problems managing stress, issues with memory/problem solving, and seizures.

Findings from the regression analysis for hypothesis #1 however showed that only marital status, PTSD, having a seizure after a TBI or having difficulty with memory/problem solving after a TBI were significantly associated with an increased odds of being at high risk for suicide (when controlling for these, and other variables such as age, LOC, total # of TBI, race). Age was not found to have a significant association with high risk for suicide in the regression model for hypothesis #1. However, in hypothesis #2, when only controlling for LOC, total # of TBI, marital status, race, and inpatient mental health visits one year prior to the interview, the likelihood for high risk for suicide decreased as the age of the veteran increased. The final model for hypothesis #2 also showed that for each additional inpatient admission for mental health, the odds of being high risk for suicide increased. In the next chapter, I will discuss the limitations of my findings and summarize the conclusions to be made from my study.

CHAPTER FIVE

Introduction

Suicide rates among veterans in the US are at a record high (Starr, 2013). Suicide is a particular concern with veterans with TBI, and given that 13% of the homeless adult population is veterans (HUD, 2012), it is an issue of concern with homeless veterans with TBI as well. To date there is no literature that investigates suicide risk in veterans experiencing both homelessness and TBI. With thousands of veterans from the recent wars in Iraq and Afghanistan at risk for the consequences of military service, it is critical to understand the associations among suicide risk and physical, psychological, social, and military factors, and access to care. This is a particular concern given that TBI is reported to have affected one in six service members during the wars in Iraq and Afghanistan (Savage, 2009).

I conducted a cross-sectional study using pre-existing data on a sample of 103 veterans from the National Center for Homelessness Among Veterans. I also performed retrospective chart reviews on this sample of veterans to collect data on healthcare services utilization. The purpose of my study was to: 1) describe the associations among high risk for suicide and specific physical, psychological, social, and military factors; and 2) to describe the associations among suicide risk and the utilization of VA Mental Health and TBI outpatient and inpatient services.

In this chapter, I will discuss the meaning and significance of my findings, and how they compare to findings within the literature. Next, I will describe implications for my research. Then, I will discuss the limitations of my findings, recommendations for future research, as well as summarize the conclusions to be made from my study.

Importance of Marital Status

Marital status had a strong association with high risk for suicide. Compared to those who were never married, those married at some point in their lives had an 8.87 increased odds of being high risk for suicide, compared to no risk, low risk, or moderate risk. Interestingly, only one veteran in the “ever married” category considered himself still married to his spouse. Therefore in this sample, being married did not confer a higher level of social support than being single (Cutrona, 1996; Kiecolt-Glaser & Newton, 2001).

Of those participants “ever married,” 89% were currently separated or divorced. The literature supports that among the biggest stressors in those who commit suicide are relationship problems (Black et al., 2012; DOD, 2012; Kaplan et al., 2012). Considering that the “ever married” participants were at a significantly increased odds for suicide risk, and 89% of that group were separated or divorced, my findings suggest that difficulty with personal relationships might be a significant predictor of high risk for suicide in this population.

Findings in my study related to marital status mirrored those of other studies. The literature suggests that the majority of veterans who commit suicide were married at some point in their lives (DOD, 2012; DoDSER, 2011; Mitchell et al., 2012). My study replicated these findings, in that 72.7% of veterans at high risk for suicide were at some point married ($p = 0.044$). Kaplan et al. (2007) had similar findings. In their study, veterans who committed suicide also tended to be married more often than non-veterans who committed suicide (72.09% vs. 50.86%). Many of the subjects in Kaplan et al.’s study claimed to live alone, demonstrating that being married may not necessarily

demonstrate a support system. Numerous studies within the literature demonstrate that among the biggest stressors in those who committed suicide were relationship problems (Black et al., 2012; DOD, 2012; Kaplan et al., 2012).

Role of PTSD, Depression, and Anxiety

PTSD had a strong association with high risk for suicide in my sample. Compared to those without PTSD, those with current PTSD were found to have an 8 times greater odds of being at high risk for suicide, compared to those with no risk, low risk, or moderate risk. These odds were higher than those reported in similar studies. For example, Pietrzak et al. (2010) found that the odds of a veteran having suicide ideation was 3.73 times greater if he/she had PTSD ($p < 0.001$). Several other investigators have replicated these findings, with increased risk for suicide in veterans with PTSD ranging from 2.8 to 4.45 times higher than those without PTSD (Brenner & Ignacio et al., 2011; Jakupcak et al., 2009; Maguen et al., 2012). One explanation for the odds ratios in my study being so much greater than these studies could be due to the fact that my sample were all homeless.

Homeless veterans with PTSD are at greater risk for suicide than non-homeless veterans for many reasons. First, being homeless with a lack of sustainable income and/or health insurance, means that this group of veterans cannot access appropriate mental health resources to treat their PTSD. Additionally, veterans receive mental healthcare benefits for a period of only five years post-discharge from the military, so many in my sample were no longer eligible for these benefits (U.S. Department of Veterans Affairs, 2013). Also, veterans experiencing homelessness are faced daily with stressful situations that can trigger and/or exaggerate their PTSD symptoms, such as lack of food/shelter or

unsafe conditions on the streets and in shelters. Substance abuse is also a known trigger that can worsen PTSD symptoms (National Institute of Mental Health, 2013), and 72.7% of veterans at high risk for suicide in my sample reported substance abuse problems.

Depression is associated with suicide risk (Jakupcak et al., 2009; Lemaire & Graham, 2011; Maguen et al., 2012; Pietrzak et al., 2010). In contrast to the literature depression and suicide risk were not significantly associated in the univariable logistic regression models, and there were no significant differences noted in the Chi-square tests when comparing the high risk group to the no/low/moderate group. Perhaps this finding may have been different if my total sample had a higher prevalence of depression, as 85.2% of my total sample denied reports of depression.

Anxiety is also associated with suicide risk in the literature (Black et al., 2011; Ilgen et al., 2010; Pfeiffer et al., 2009). Again, contrasting the literature, I did not find significant association between anxiety and suicide risk, most likely due to the fact that only 9.7% of my total sample reported anxiety. There also appears to be a significant association with both bipolar and psychotic disorders in the literature (Black et al., 2011; Goldstein et al., 2012; Ilgen et al., 2010; Lemaire & Graham, 2011), but these disorders also were not significantly associated with suicide risk, most likely due to the small number of veterans in my sample who had these disorders. For example, only two veterans in the high risk for suicide group had a history of psychotic disorder, and none had bipolar disorder.

Additionally, I expected to find a strong association between high risk for suicide and alcohol and drug use. Investigators suggest that veterans who abuse alcohol or drugs tend to be more at risk for suicide when compared to veterans who do not (Black et al.,

2011; Britton et al., 2012; DOD, 2012; Jakupcak et al., 2009; Ilgen et al., 2010; Maguen et al., 2012; Pietrzak et al., 2010). However, neither alcohol nor drug abuse was found to have a significant association with high risk for suicide.

Health Care Utilization

I did not find a strong association between utilization of VA healthcare services and high risk for suicide, with the exception of inpatient visits for mental health within the year prior to enrollment in the study. The odds of being high risk for suicide increased by 2.85 for each additional inpatient admission related to mental health, compared to those with no risk, low risk, or moderate risk. One explanation for this increased odds is that individuals being admitted for psychiatric inpatient treatment often have severe mental health issues. Their high risk for suicide is most likely related to the severity of their mental health issues, and not the actual utilization of this VA healthcare service. My findings replicated those of other studies in the literature that showed an increased risk of suicide post-discharge after receiving inpatient mental health treatment (Crawford, 2004; Large, 2011).

Number of TBIs and Deployment History

Repeat TBI (rTBI) has been shown to have devastating effects, including increased symptom severity (Deutsch-Lezak, 1995). rTBI in sports-related TBI has been recently linked to suicide (Belson, 2013; Schwartz, 2011; Smith, 2011; Tierney, 2012). Most literature surrounding rTBI involves sports injuries, although similar neurological changes in brain tissue have been found after rTBI in both sports-related injuries and combat-related injuries (Goldstein et al., 2012; Omalu et al., 2011). Due to the similarities in neurological changes, and the demonstrated link between rTBI and suicide

in sports-related TBI, I was surprised to see that the total number of TBI did not have a strong association with high risk for suicide in my study.

The literature is less clear about the association of suicide risk with combat or deployment history. Some investigators state that being deployed is associated with a greater risk of suicide (Bachynski, et al., 2012; Black et al., 2011; DoDSER, 2011), while others do not support this association (AFHSC, 2012; Harben, 2009; Thomsen et al., 2011). Several investigators also state that being exposed to combat during times of war significantly increases risk for suicide ideation or attempts (Bachynski, et al., 2012; Cesure et al., 2013; Maguen et al., 2012; Mitchell et al., 2012), while others do not support this association between combat exposure and suicide risk (AFHSC, 2012; Bossarte et al., 2012; Thomsen et al., 2011). It is possible that the type of deployment (combat vs. non-combat) may in fact be more significant than the actual number of deployments. For instance, some investigators found that deployment history was only associated with suicide risk when it involved combat exposure, which suggests that level of combat exposure may be a confounding variable (Gradus et al., 2011).

Relating the Findings to the Conceptual Framework

The Suicide Risk in Homeless Veterans with TBI Model (SRHV-TBI) was influenced by Bronfenbrenner's Ecological Systems Theory (see Figure 1). Bronfenbrenner (1994) described the process of development in terms of being affected by an individual's interaction between the persons, objects, and symbols in their immediate environment. I adapted this theory to examine the associations between a veteran's individual risk for suicide and his/her exposed environmental systems, while the veteran is experiencing homelessness and TBI. In my adaptation of Bronfenbrenner's

theory, I labeled these environmental systems as: physical, psychological, social, and military (see Figure 1).

The main premise of the Ecological Systems Theory is that there are interacting relationships between environmental systems. The findings from my study did not support these interactions. No strong associations were noted between variables within these systems when I conducted a Pearson's correlation matrix. Also, there were no significant interactions noted when variables within these systems were entered into the regression models.

Although the theoretical connections can be supported by the literature, these influencing relationships were not statistically significant in my study. In order to properly test this conceptual model, future research is needed using a different approach, to examine the interacting relationships between the variables in each sub-system on a broader scale, using a larger sample size. Please refer to my later discussion on recommendations for future research.

Limitations of the Study

One limitation of my study is related to the power in detecting group differences between the high risk for suicide group and the no/low/moderate risk group. In logistic regression, there tends to be a greater sample size demand for sufficient power. This concern has to do with the smaller sample size in the high-risk group (11 vs. 92 veterans), which can result in larger odds ratios (OR) and wider confidence intervals (CI). There were a few variables that had very high ORs in the final multivariable model, such as marital status (OR =8.87), PTSD (OR =8.02), memory/problem solving (OR =8.42), and seizures (OR =17.27). These high ORs were most likely due to the fact that there were

very few cases in the high-risk group that had data in the “yes” category for these variables. For this reason, the estimations may not be correct, as there is insufficient information, and should not be trusted.

Additionally, the wide CIs for the ORs may indicate that the model could not lead to precise estimates. For example, this was shown in hypothesis #1 in the variables of: marital status (CI =1.066 – 73.856), race (CI =0.31 – 8.65), PTSD (CI =1.1 – 58.523), memory/problem solving (CI =1.024 – 60.285), seizures (CI =1.303 – 228.814), and in hypothesis #2: marital status (CI =0.656 – 24.955), race (CI =0.163 – 11.341), and inpatient mental health visits at one year prior to the interview (CI =1.297 – 6.286). These wide CIs are most likely due to the small size of the high risk for suicide group, as well as the small proportions of the sample in one category of a given predictor.

In an attempt to improve these estimations, I entered the data into STATA-12 in order to rerun the models as “exact logistic regressions”, and then compare these results to those from SPSS-17 to see if I could get more precise estimates. However, the data failed to converge in STATA-12, so exact logistic regressions were not possible. The most likely cause for the data failing to converge in STATA-12 may be due to "complete separation" which can happen in small samples when there is little variance in one variable across levels of another (Longest, 2012).

Other limitations existed as well. First, there was a lack of heterogeneity in my sample, making my findings difficult to generalize to other populations. For example, there was no representation of females in my study, as it contained all male veterans. Whites were also underrepresented, with 82.5% of the total sample being African American. The majority (77.7%) were Catholic/Christians, and all were from the

Philadelphia area, which does not make my findings generalizable to non-Christians or veterans from Midwest or rural areas. The sample was also made up of all homeless veterans with TBI. There were no comparisons able to be made between my sample and either non-homeless, non-veteran, or non-TBI groups. Having one of these groups to compare findings against would have provided more information. Additionally, 66% of the total sample was over the age of 51 years old, with little representation of younger veterans.

Veterans from the most recent wars in Iraq and Afghanistan were underrepresented in my study. The majority of these veterans served during the Korean War, and Vietnam War, making these findings difficult to generalize to younger veterans from more current wars. Only 14.6% of my sample had been exposed to combat, and 62.1% had never been deployed. Findings may have been different if more veterans with combat exposure or deployments would have been included in my study, as well as veterans from more recent wars. Also, the majority (84.5%) of these veterans in my study had an E1-E4 military rank. Those of a higher rank were also underrepresented in my study. My findings may not be applicable to veterans from more current wars, or veterans of a higher rank (e.i. officers).

Another limitation of my study was that it involved a secondary analysis, using a pre-existing data set. Without prospective data, I could not recognize or correct any measurement errors. Also, there were variables that I would have included in the analysis, or controlled for, that were not available to me. These variables may have produced different findings. For instance, I did not include location and severity of the brain injury, abuse as a child, criminal history, underlying medical conditions, and physiological

markers (thyroid function tests, nutritional labs, etc.). Additionally, the chart reviews were only performed by myself, with no double data entry. I used several strategies to reduce error. I performed three checks on each veteran to ensure I entered in the correct information for the correct individual, and I looked in at least 3 different areas of the veterans' charts to ensure that I did not miss any visits.

Implications and Recommendations for Policy Change

Over the past ten years, suicide awareness and prevention efforts have increased. Unfortunately, so have the rates of suicide within the military. The Department of Defense (DoD) and VA healthcare systems have made tremendous improvements in targeting mental health during this time, including but not limited to the development of the Transition Assistance Program, the VA PTSD program, the VA Suicide Prevention Coordinators, the VA Healthcare for Homeless Veterans (HCHV) Program, the Readjustment Counseling Service's Vet Center Programs, the Rapid Response Referral Program (RRRP), the VA Center on Homelessness Among Veterans, and the Mental Health Residential Rehabilitation and Treatment Programs (U.S. Department of Veterans Affairs., 2014). However, the DoD and VA healthcare systems still remain passive in their approach to tackle the growing mental health crisis.

There are many implications for policy change, and general recommendations, related to the prevention of suicide in this population. My first recommendation involves being more aggressive during the reintegration period, during the time when the individual is transitioning from being an active serviceman to a veteran. This time is the most critical for this group, as this is the time that their mental and physical symptoms worsen (Wands, 2013), and the veteran is most at risk of "falling through the cracks" and

the social consequences that can occur, e.i. loss of relationships, loss of job, homelessness, etc. One way to prevent this failure is to connect them with the VA health system. However, there are many barriers to receiving mental health care in this population.

One barrier involves the separation of the DoD healthcare records from the VA healthcare records. For instance, if an individual attempts suicide while in the military, and is treated by mental health care providers in the DoD, that individual's care stops once he/she leaves the military and becomes a veteran. The veteran then has to apply for benefits through the VA healthcare system and wait for until his/her eligibility is approved. This current system creates a total lack of continuity in care during this process. These two systems need to merge so that care can be continued. The process of applying for and receiving benefits after discharge from the military also has to be made easier during this transition phase, so that these veterans are not lost in the system.

Stigmatization continues to be another barrier for those seeking mental health care, as many veterans report not seeking care due to fear of judgment, or damage to their careers (Wands, 2013). One of the biggest efforts seen in policy change related to stigmatization occurred with the Joshua Omvig Veterans Suicide Prevention Act was signed (110th Congress, 2007-2008). This bill targeted the de-stigmatization of mental health in the veteran communities, as well as the establishment of the veterans suicide hotline (110th Congress, 2007-2008). My further recommendations include increasing suicide awareness campaigns (such as walks or community education) and the development of more community-based veteran support groups.

Another barrier to receiving care that could potentially reduce the risk of suicide is that many veterans are not eligible to access the available resources. Currently, a veteran has a period of five years after he/she leaves the military to be eligible for mental health care benefits through the VA. Many times, mental health issues such as PTSD and suicide ideation have a delayed onset from discharge from the military, as the veteran is trying to adjust back to a civilian life. This policy needs to be changed to allow these veterans to seek care for mental health issues longer than five years. Fortunately, the Suicide Prevention for America's Veterans Act is aiming to change this. This bill is currently under review, and if passed would extend the time to receive mental health treatment from five years to 15 years (Fantz, 2014).

A veteran will also not be eligible to receive mental healthcare if he/she was discharged from the military in a non-honorable way. This policy needs to be re-evaluated so that service members who are discharged for bad conduct can still receive mental health benefits if the behavior can be linked to a service-related psychological/neurological injury (PTSD/TBI), and the individual is offered the opportunity to receive treatment prior to being discharged. Penalizing these soldiers for misconduct without offering them treatment options first, is not only unethical but contributes to the problem. According to the Uniform Code of Military Justice Article 134, a serviceman can be penalized, and dishonorably discharged if he/she attempts suicide (Powers, 2014). There needs to be a change in policy so that these individuals can receive the mental health treatment that they deserve.

Another barrier to receiving mental healthcare is the small number of mental health care providers at the DoD and VA facilities to support the demand. Nurses,

physicians and mental healthcare providers in civilian-based healthcare systems need to be trained to be able to care for our nation's veterans. My recommendations include integrating military care (including TBI and PTSD training) into these college programs, providing in-services to civilian healthcare workers in non-military hospitals, and developing a nationally recognized certification program to train healthcare providers in military care, PTSD, TBI and suicide prevention. Additionally, loan forgiveness programs and/or sign-on bonuses should be offered at VA facilities to attract and hire more mental healthcare professionals to meet the demand.

The findings from my study also have implications for changes in practice when working with veterans who are homeless and have a history of TBI. My findings showed that relationship problems, PTSD, and certain TBI-related symptoms are associated with a high risk for suicide in this group. The VA healthcare system offers numerous resources, as mentioned above, that target these issues. It is imperative for healthcare workers to become more aggressive in screening for these issues in all settings (primary care, ERs, mental health clinics, etc.), and to provide appropriate referrals, so that these veterans can get the care that they need in order to prevent suicides from occurring.

Recommendations for Future Nursing Research

The results of this study contribute to the body of research associated with outcomes in veterans with TBI. There are numerous paths for future research to take that would build on this study. One recommendation for future research would be to replicate this study prospectively in a larger, more diverse sample, using validated instruments for screening for suicide risk. For example, the Suicide Behaviors Questionnaire- Revised

(SBQ-R), which in the general population has a sensitivity of 93% and specificity of 95%, might be a possible choice.

Another option would be to conduct a similar study on non-homeless veterans. The entire sample was people who are homeless. Being homeless brings with it a myriad of additional issues (related to lack of income, housing, food, etc.) that may have confounded these results. It would be more generalizable to conduct a similar study on a sample of veterans with TBI who are not homeless, or perhaps have a control group of non-homeless veterans.

Another option for future research, which would also involve removing the homelessness factor, would be to conduct a similar study that examines the relationships between suicide risk and specific physical, social, psychological and military factors in either a study comparing veterans with TBI to veterans without TBI, or a study comparing findings between veterans vs. civilians. These types of studies would provide more information to better help us understand what makes a veteran with TBI at high risk for suicide.

This kind of useful information could be used to develop a risk assessment tool, which could be used when veterans present to ERs, mental health clinics, or primary care offices. A standardized screening tool is extremely needed in this population. If these veterans are screened early enough, and found to be at risk, certain interventions could go into play that could prevent these individuals from taking their own life.

This leads to my next recommendation for future research, involving interventions. Once we have a better sense of what puts a veteran with a history of TBI at greatest risk for suicide, and the best ways to identify these individuals, we can then

develop and test interventions aimed at these risk factors. Suicide is one of many social outcomes that can occur after a TBI (see Figure 9). Studying social outcomes on a broader scale is another way to increase knowledge related to understanding poor social outcomes after a TBI. Next, I will briefly describe my long-term plan for developing a program of research aimed at increasing better social outcomes after a TBI.

Future Directions

Chronic symptoms of TBI are debilitating and life changing. The CDC estimates that 5.3 million US citizens are living with disability as a result of a TBI (CDC, 2014). Managing symptoms has become a primary health concern for US military service members who have served during the wars in Iraq and Afghanistan, where TBI has become known as the “signature wounds” that affect 1 in 6 service members. Known symptoms of TBI can present as cognitive deficits, personality changes, psychological conditions, pain and sleep problems. These symptoms have devastating effects on the individual’s overall physical and mental health, decreasing their quality of life, and inhibiting their ability to achieve normal social functioning.

Understanding and managing the symptoms after a TBI will improve our ability to prevent those suffering from this condition from developing poor outcomes, and the social consequences that follow, including suicide, criminal behavior, substance abuse, homelessness, and the inability to maintain roles in their daily lives.

We know that injury to specific areas of brain has been linked to TBI-related symptoms. However, the relationship between the location of brain injuries and their associated symptoms, and poor social outcomes is still unclear. Given the high prevalence of TBI in both military and civilian populations, and the disruption that

symptoms may cause with respect to overall health and social functioning, this is a critical area for future research. My long-term goal is to develop and test interventions to improve symptom management, reduce negative health outcomes, and decrease all forms of social consequences of TBI in veterans and civilians.

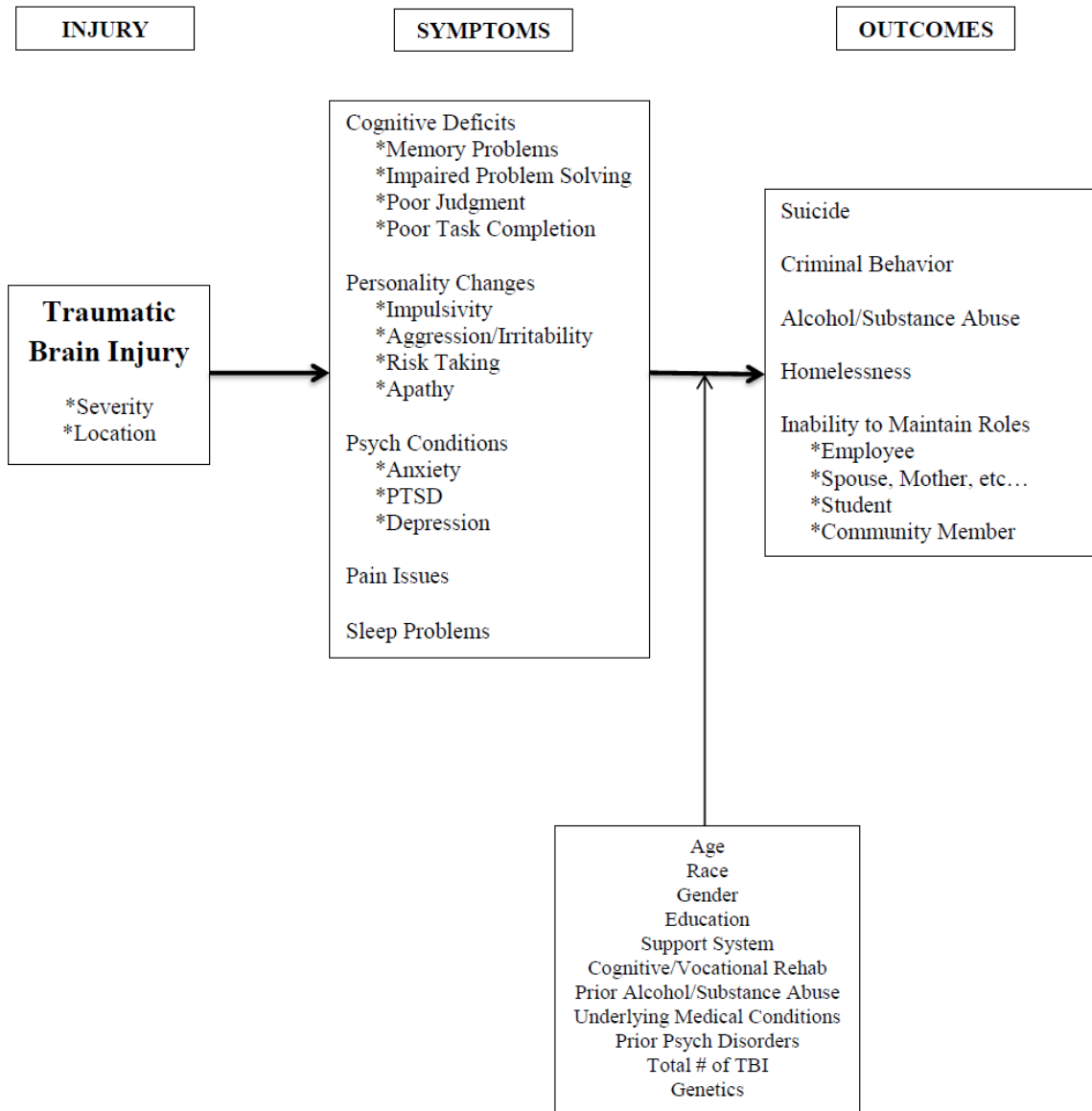


Figure 9. Social outcomes after a TBI

Conclusion

This study provides a foundation for research related to suicide risk as an outcome of TBI in homeless veterans. I defined suicide risk as feelings of hopelessness, thoughts of being better off dead, thoughts of hurting oneself, thoughts/plans about suicide, or history of a suicide attempt, based on the questions asked in the Mini Neuropsychiatric Interview (MINI). However, there are numerous other ways to define suicide risk, and all forms of risk need to be further explored. This area of research is critical to study, as well as timely, with up to 22 veterans committing suicide each day (Zoroya, 2013) and TBI affecting one in six US military service members who returned from the wars in Iraq and Afghanistan (Savage, 2009). Further research is needed to improve the health and quality of life of these individuals, decrease their suffering, and prevent future suicides from occurring in this population.

APPENDIX 1. DEMOGRAPHICS FORM

1. What country were you born in?

- United States
- Other: _____

2. Age: _____

3. Sex/Gender:

- Male
- Female
- Transgender

4. What is your Race/Ethnicity (check all that apply)?

- American Indian or Alaska Native
- Asian/Asian-American
- Black or African American
- Non-European Hispanic or Latino(a)
- Native Hawaiian or Other Pacific Islander
- Caucasian/White
- Other (please specify) _____
- Prefer not to answer

5. What is your religious affiliation?

- Protestant
- Catholic
- Judaism
- Muslim
- Hindu
- Buddhist
- Mormon
- Agnostic
- Atheist
- None
- Other (please specify) _____

6. Is there a denomination of the above religion with which you identify?

- Yes No
- a. **If yes**, what is that denomination? _____

7. How frequently do you attend religious community meetings (e.g., services, prayer meetings)?

- One or more times per week
- One or more times per month
- One or more times per year
- Less than once per year
- N/A

8. Your Education Level (Please mark highest level completed):

- Less than 9th grade
- 9th – 12th grade, No diploma
- High School Diploma or Equivalent
- Some College, No Degree
- Associate Degree
- Bachelor's Degree
- Graduate or Professional Degree

Number of formal education years completed: _____

9. Annual Household Income

- Less than \$10,000
- \$10,000 – \$14,999
- \$15,000 – \$24,999
- \$25,000 – \$34,999
- \$35,000 – \$49,999
- \$50,000 – \$74,999
- \$75,000 – \$99,999
- \$100,000 – \$149,999
- \$150,000 – \$199,999
- \$200,000 or more

10. Marital/Relationship Status

- Never Married
- Married – 1st marriage
- Married – 2nd marriage
- Married – 3rd + marriage
- Separated
- Divorced _ (year)
- Widowed _ (year)
- Cohabiting/Unmarried Partner

11. Employment Status (Check all that apply)

- Employed: Military Occupation – Full Time/Active Duty
- Employed: Military Occupation – Reserves
- Employed Full-Time (non-military occupation)
- Employed Part-Time (non-military occupation)
- Not Employed Outside the Home
- Unemployed
- Student

12. How old were you the first time you were homeless/didn't have regular housing? _____

MILITARY SERVICE INFORMATION

13. Branch of Military Service

Army

- Active Duty
- Army Reserves
- Army National Guard

Air Force

- Active Duty
- Air Force Reserves
- Air Force National Guard

Navy

- Active Duty
- Naval Reserves

Marine Corps

- Active Duty
- Marine Corps Reserves

Coast Guard

- Active Duty
- Coast Guard Reserves

National Guard

- Active Duty
- National Guard Reserves

14. Number of Years/Months of Military Service: _____

15. Rank at Separation: _____

16. Did you deploy?

- Yes
- No

a. **If yes,**

i. Country _____:

ii. Year(s): _____

17. Do you have a history of combat experience?

- Yes
- No

a. **If yes,**

i. Country _____

ii. Year(s): _____

APPENDIX 2. OHIO STATE UNIVERSITY TBI IDENTIFICATION METHOD

INSTRUCTIONS

Step 1. Identify injuries that may have included a traumatic brain injury (TBI).

The goal of this step is to help the person recall injuries during their lifetime that may have included a traumatic brain injury. You will ask about injuries several different ways in order to jog their memory.

In this step inquire about all injuries, not just those to the head. In the rows numbered 1-12 you will make note of those that involved EITHER of the following:

- an impact to the head or neck
- a mechanism of injury that involved high velocity forces like moving vehicle crashes, falling from more than 10 feet, or being shaken violently.
- Being near an explosion

Do NOT include loss of consciousness solely due to a drug overdose, other toxic exposure, cerebral vascular accident (stroke) or loss of oxygen to the brain.

Do NOT include memory loss solely due to an alcohol blackout.

For each injury that involved the head or neck, also determine how old the person was when it occurred.

In this step do not be concerned about whether a TBI occurred, only if it was possible.

These are questions you will ask to identify potential injuries.

A. “In the last 3 months have you had an injury for which you received medical attention or should have?”

Medical attention includes hospitalizations, emergency room visits, going to a doctor’s office or clinic, or being treated by a healthcare provider (like a nurse, team doctor, or

Emergency Medical Technician) away from a hospital or office. By ‘should have’ we mean that later on you realized the injury was more serious and you should have sought help but did not.”

B. “In the last year have you had an injury for which you received medical attention or should have?”

C. “In the last 5 years have you had an injury for which you received medical attention or should have?”

D. Was there any time before the last 5 years when you had an injury for which you received medical attention or should have? Think about when you were a child. Think about incidents you may have been told about when you were a baby.”

E. “From any time in your life, are there any injuries you may have forgotten to mention. Think about times you might have been in a car accident, crashed a bike, fell, got hurt playing sports or somebody hit you or shook you hard, or you were exposed to an explosion or blast.”

F. “When you were IN THE LINE OF DUTY, did you sustain an injury for which you received medical attention or should have that you have not yet told me about?” Think about times you might have been hit by fragments, bullets, blasts (including IED, RPG, land mine, grenade, etc.), vehicular accidents (including airplane or helicopter), or falls.”

Step 2. (Guidelines for the Administrator)

Determine if a TBI occurred and what its effects were.

The goal of this step is to elicit the details about injuries to the head or neck, or incidents that involved high velocity forces (i.e., moving vehicle crashes, falls from >10

ft., or being shaken) to determine if there was altered consciousness (i.e., unconsciousness, dazed, confused, memory lapses).

For each injury identified in Step 1 ask: “For the first injury you told me about, remember you said at age ____ you [refer to cause or other description of injury], were you knocked out or did you lose consciousness?” If Yes: ask “For how long?” (put a check mark in the box corresponding to the correct duration: less than 5 minutes, 5 to 30 minutes, more than 30 minutes. Require the respondent to estimate the duration. If they cannot estimate after encouragement, enter a check mark in the “unable to estimate” row. Do NOT include loss of consciousness solely due to a drug overdose, stroke or loss of oxygen to the brain.

If “No” to loss of consciousness, ask, “Did the injury cause you to become dazed or confused, or to forget what happened?” Put a check mark in the dazed or confused, and/or the memory loss rows if they indicate either or both occurred. Be sure to differentiate these altered states from the effects of alcohol or drugs. The injury must have caused being dazed, confused or having a lapse of memory. Do NOT include memory loss due to an alcohol blackout.

For each injury then ask “Were you hospitalized as a result of this injury?” If they were, ask “Were you discharged to home (H) a rehabilitation facility (R) or a nursing home (NH)?” and enter the correct letter in the column for that injury. If they were not hospitalized ask “Did you receive any other medical attention?” and check all boxes that apply. Other healthcare provider might include a team doctor, a nurse who was present, or an Emergency Medical Technician who did not take the person to the Emergency Room. If they received no medical attention, ask “Do you think you should

have received care for this injury?” and enter a check mark if they thought they should have.

For each injury then ask “After the injury did you have problems caused by the injury that you did not have before or that got much worse?” Ask about each symptom and place a check mark in the column if the symptom occurred as a result of the injury or was made worse by it. Generally, we are interested in symptoms that persisted at least several weeks or longer.

Multiple mild injuries.

In some cases, people who have experienced multiple mild injuries as a result of child abuse, domestic violence, or some sports (boxing and football in particular) may have trouble isolating individual injuries. The interviewer should make every attempt to have the individual identify specific injuries and record them in the grid on page 2.

However, if this is not possible, check the “multiple mild” column and indicate the cause of these injuries (e.g., child abuse, domestic violence, boxing). Under age, record the age range during which these multiple mild injuries took place. Under “Altered Consciousness” check the longest duration of lost consciousness or the most typical altered consciousness. Under medical care received record the most intensive medical attention received.

For each injury identified in Step 1 ask the questions shown in bold print.

“For the first injury you told me about, remember you said [refer to cause or other description of injury], were you knocked out or did you lose consciousness?”

If “Yes” ask them “For how long?”

- Put a check mark in the box corresponding to the correct duration.

- Require the respondent to estimate the duration.
- If they cannot estimate after encouragement, enter a check mark in the “unable to estimate” row.
- Do NOT include loss of consciousness solely due to drug overdose, stroke or loss of oxygen to the brain.

Do NOT include memory loss solely due to an alcohol blackout, If “No” to loss of consciousness, ask, “Did the injury cause you to become dazed or confused, or to forget what happened?”

- Put a check mark in the dazed or confused, and/or the memory loss rows if they indicate either or both occurred.
- Be sure to differentiate these altered states from the effects of alcohol or drugs.
- The injury must have caused being dazed, confused or having a lapse of memory.

For each injury then ask “Were you hospitalized as a result of this injury?”

If they were hospitalized, ask “Were you discharged to home (H) a rehabilitation facility (R) or a nursing home (NH)?” and enter the correct letter in the column for that injury.

If they were not hospitalized ask “Did you receive any other medical attention?”

- Check all boxes that apply
- Other healthcare provider might include a team doctor, a nurse who was present, or an Emergency Medical Technician who did not take the person to the Emergency Room.

If they received no medical attention, ask “Do you think you should have received care for this injury?” and enter a check mark if they thought they should have.

For each injury ask “After the injury did you have problems caused by the injury that you did not have before or that got much worse?”

- Ask about each symptom and place a check mark in the column if the symptom occurred as a result of the injury or was made worse by it.
- Generally, we are interested in symptoms that persisted several weeks or longer.

Note: For “multiple mild” injuries indicate “multiple mild due to _____.” Under age, record the age range during which the injury occurred. Under “Altered Consciousness” check the longest duration of lost consciousness or the typical altered consciousness. Under medical care received record the most intensive medical attention received.

FOR Questions 1. A-F												
Multiple mild? (if yes, place a check in this column)												
How old were you? (do not leave blank)												
Were you in the line of duty? (Y or N)												
Cause of Injury (TR, SV, OV, BL, FA, SP, OT)												
Identifier: _____ Interviewer: _____ Age: _____ Gender: Male Female Cause of injury: Transportation (TR); Self-inflicted violence (SV); Other-												
Step 2.	1	2	3	4	5	6	7	8	9	1	1	1
ALTERED CONSCIOUSNESS												
Were you knocked out or did you lose consciousness from this injury? (Y/N)												
If yes, for less than 5 minutes												
5 to 30 minutes												
More than 30 minutes												
Unable to estimate												

[If <u>not</u> knocked out] Did the injury cause you to become dazed or confused? (Y/N)																				
[If <u>not</u> knocked out] Did you forget what happened before or after? (Y/N)																				
MEDICAL ATTENTION																				
Were you hospitalized or treated at a Combat Support Hospital (CSH)? (Y/N)																				
[If hospitalized] Were you discharged to home (H) a rehabilitation facility (R) or a nursing home (NH)?																				
[If <u>not</u> hospitalized] Did you receive any other medical attention?																				
Treated in the emergency room or by a combat medic?																				
Doctor's office, clinic, or battalion aid station?																				
Other healthcare provider?																				
Should have received help but did not?																				
SYMPTOMS																				
After the injury did you have problems caused by the in-jury <u>that you did not have before or that got much worse?</u>																				
Headaches?																				
Dizziness or balance problems?																				
Blurred vision?																				
Tiredness/fatigue or sleep problems?																				
Seizures?																				
Remembering things or solving problems?																				
Managing stress or emotional upsets?																				
Controlling your temper/irritability?																				
Ringing in the ears?																				
Other- specify:																				

APPENDIX 3. TBI-4 QUESTIONNAIRE

Veteran's Name: _____

Veteran's SSN: _____

Oral Informed Consent Obtained: _____

Date: _____

1. Have you ever been hospitalized or treated in an emergency room following a head or neck injury?

Yes

No

2. Have you ever been knocked out or unconscious following an accident or injury?

Yes

No

3. Have you ever injured your head or neck in a car accident or from some other moving vehicle accident?

Yes

No

4. Have you ever injured your head or neck in a fight or a fall?

Yes

No

If a "Yes" response is provided above, please ask the veteran to provide details:

APPENDIX 4. MINI INTERNATIONAL NEUROPSYCHIATRIC INTERVIEW

M.I.N.I.

MINI INTERNATIONAL NEUROPSYCHIATRIC INTERVIEW

English Version 6.0.0

DSM-IV

USA: D. Sheehan¹, J. Janavs, K. Harnett-Sheehan, M. Sheehan, C. Gray.

¹University of South Florida College of Medicine- Tampa, USA

EU: Y. Lecrubier², E. Weiller, T. Hergueta, C. Allgulander, N. Kadri, D. Baldwin, C. Even.

²Centre Hospitalier Sainte-Anne – Paris, France

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DISCLAIMER

Our aim is to assist in the assessment and tracking of patients with greater efficiency and accuracy. Before action is taken on any data collected and processed by this program, it should be reviewed and interpreted by a licensed clinician.

This program is not designed or intended to be used in the place of a full medical and psychiatric evaluation by a qualified licensed physician – psychiatrist. It is intended only as a tool to facilitate accurate data collection and processing of symptoms elicited by trained personnel.

M.I.N.I. 6.0.0 (January 1, 2010)

Patient Name:	_____	Patient Number:	_____
Date of Birth:	_____	Time Interview Began:	_____
Interviewer's Name:	_____	Time Interview Ended:	_____
Date of Interview:	_____	Total Time:	_____

	MODULES	TIME FRAME	MEETS CRITERIA	DSM-IV-TR	ICD-10	PRIMARY DIAGNOSIS
A	MAJOR DEPRESSIVE EPISODE	Current (2 weeks)	<input type="checkbox"/>			
		Past	<input type="checkbox"/>			
		Recurrent	<input type="checkbox"/>			
	MAJOR DEPRESSIVE DISORDER	Current (2 weeks)	<input type="checkbox"/>	296.20-296.26 Single	F32.x	<input type="checkbox"/>
		Past	<input type="checkbox"/>	296.20-296.26 Single	F32.x	<input type="checkbox"/>
		Recurrent	<input type="checkbox"/>	296.30-296.36 Recurrent	F33.x	<input type="checkbox"/>
B	SUICIDALITY	Current (Past Month)	<input type="checkbox"/>			
		<input type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> High				
C	MANIC EPISODE	Current	<input type="checkbox"/>			
		Past	<input type="checkbox"/>			
	HYPOMANIC EPISODE	Current	<input type="checkbox"/>			
		Past	<input type="checkbox"/>	<input type="checkbox"/> Not Explored		
	BIPOLAR I DISORDER	Current	<input type="checkbox"/>	296.0x-296.6x	F30.x- F31.9	<input type="checkbox"/>
		Past	<input type="checkbox"/>	296.0x-296.6x	F30.x- F31.9	<input type="checkbox"/>
	BIPOLAR II DISORDER	Current	<input type="checkbox"/>	296.89	F31.8	<input type="checkbox"/>
		Past	<input type="checkbox"/>	296.89	F31.8	<input type="checkbox"/>
	BIPOLAR DISORDER NOS	Current	<input type="checkbox"/>	296.80	F31.9	<input type="checkbox"/>
		Past	<input type="checkbox"/>	296.80	F31.9	<input type="checkbox"/>
D	PANIC DISORDER	Current (Past Month)	<input type="checkbox"/>	300.01/300.21	F40.01-F41.0	<input type="checkbox"/>
		Lifetime	<input type="checkbox"/>			
E	AGORAPHOBIA	Current	<input type="checkbox"/>	300.22	F40.00	<input type="checkbox"/>
F	SOCIAL PHOBIA (Social Anxiety Disorder)	Current (Past Month)	<input type="checkbox"/>			
		Generalized	<input type="checkbox"/>	300.23	F40.1	<input type="checkbox"/>
		Non-Generalized	<input type="checkbox"/>	300.23	F40.1	<input type="checkbox"/>
G	OBSESSIVE-COMPULSIVE DISORDER	Current (Past Month)	<input type="checkbox"/>	300.3	F42.8	<input type="checkbox"/>
H	POSTTRAUMATIC STRESS DISORDER	Current (Past Month)	<input type="checkbox"/>	309.81	F43.1	<input type="checkbox"/>
I	ALCOHOL DEPENDENCE	Past 12 Months	<input type="checkbox"/>	303.9	F10.2x	<input type="checkbox"/>
	ALCOHOL ABUSE	Past 12 Months	<input type="checkbox"/>	305.00	F10.1	<input type="checkbox"/>
J	SUBSTANCE DEPENDENCE (Non-alcohol)	Past 12 Months	<input type="checkbox"/>	304.00-.90/305.20-.90	F11.1-F19.1	<input type="checkbox"/>
	SUBSTANCE ABUSE (Non-alcohol)	Past 12 Months	<input type="checkbox"/>	304.00-.90/305.20-.90	F11.1-F19.1	<input type="checkbox"/>
K	PSYCHOTIC DISORDERS	Lifetime	<input type="checkbox"/>	295.10-295.90/297.1/	F20.xx-F29	<input type="checkbox"/>
		Current	<input type="checkbox"/>	297.3/293.81/293.82/	293.89/298.8/298.9	
	MOOD DISORDER WITH PSYCHOTIC FEATURES	Lifetime	<input type="checkbox"/>	296.24/296.34/296.44	F32.3/F33.3/	<input type="checkbox"/>
		Current	<input type="checkbox"/>	296.24/296.34/296.44	F30.2/F31.2/F31.5	
					F31.8/F31.9/F39	<input type="checkbox"/>
L	ANOREXIA NERVOSA	Current (Past 3 Months)	<input type="checkbox"/>	307.1	F50.0	<input type="checkbox"/>
M	BULIMIA NERVOSA	Current (Past 3 Months)	<input type="checkbox"/>	307.51	F50.2	<input type="checkbox"/>
	ANOREXIA NERVOSA, BINGE EATING/PURGING TYPE	Current	<input type="checkbox"/>	307.1	F50.0	<input type="checkbox"/>
N	GENERALIZED ANXIETY DISORDER	Current (Past 6 Months)	<input type="checkbox"/>	300.02	F41.1	<input type="checkbox"/>
O	MEDICAL, ORGANIC, DRUG CAUSE RULED OUT		<input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> Uncertain			
P	ANTISOCIAL PERSONALITY DISORDER	Lifetime	<input type="checkbox"/>	301.7	F60.2	<input type="checkbox"/>

IDENTIFY THE PRIMARY DIAGNOSIS BY CHECKING THE APPROPRIATE CHECK BOX.
 (Which problem troubles you the most or dominates the others or came first in the natural history?) _____



The translation from DSM-IV-TR to ICD-10 coding is not always exact. For more information on this topic see Schulte-Markwort. Crosswalks ICD-10/DSM-IV-TR. Hogrefe & Huber Publishers 2006.

GENERAL INSTRUCTIONS

The M.I.N.I. was designed as a brief structured interview for the major Axis I psychiatric disorders in DSM-IV and ICD-10. Validation and reliability studies have been done comparing the M.I.N.I. to the SCID-P for DSM-III-R and the CIDI (a structured interview developed by the World Health Organization). The results of these studies show that the M.I.N.I. has similar reliability and validity properties, but can be administered in a much shorter period of time (mean 18.7 ± 11.6 minutes, median 15 minutes) than the above referenced instruments. It can be used by clinicians, after a brief training session. Lay interviewers require more extensive training.

INTERVIEW:

In order to keep the interview as brief as possible, inform the patient that you will conduct a clinical interview that is more structured than usual, with very precise questions about psychological problems which require a yes or no answer.

GENERAL FORMAT:

The M.I.N.I. is divided into **modules** identified by letters, each corresponding to a diagnostic category.

- At the beginning of each diagnostic module (except for psychotic disorders module), screening question(s) corresponding to the main criteria of the disorder are presented in a **gray box**.
- At the end of each module, diagnostic box(es) permit the clinician to indicate whether diagnostic criteria are met.

CONVENTIONS:

Sentences written in « normal font » should be read exactly as written to the patient in order to standardize the assessment of diagnostic criteria.

Sentences written in « CAPITALS » should not be read to the patient. They are instructions for the interviewer to assist in the scoring of the diagnostic algorithms.

Sentences written in « bold » indicate the time frame being investigated. The interviewer should read them as often as necessary. Only symptoms occurring during the time frame indicated should be considered in scoring the responses.

Answers with an arrow above them (➡) indicate that one of the criteria necessary for the diagnosis(es) is not met. In this case, the interviewer should go to the end of the module, circle « **NO** » in all the diagnostic boxes and move to the next module.

When terms are separated by a *slash (/)* the interviewer should read only those symptoms known to be present in the patient (for example, question G6).

Phrases in (parentheses) are clinical examples of the symptom. These may be read to the patient to clarify the question.

RATING INSTRUCTIONS:

All questions must be rated. The rating is done at the right of each question by circling either Yes or No. Clinical judgment by the rater should be used in coding the responses. Interviewers need to be sensitive to the diversity of cultural beliefs in their administration of questions and rating of responses. The rater should ask for examples when necessary, to ensure accurate coding. The patient should be encouraged to ask for clarification on any question that is not absolutely clear.

The clinician should be sure that each dimension of the question is taken into account by the patient (for example, time frame, frequency, severity, and/or alternatives).

Symptoms better accounted for by an organic cause or by the use of alcohol or drugs should not be coded positive in the M.I.N.I. The M.I.N.I. Plus has questions that investigate these issues.

For any questions, suggestions, need for a training session or information about updates of the M.I.N.I., please contact:

David V Sheehan, M.D., M.B.A.
University of South Florida College of Medicine
3515 East Fletcher Ave, Tampa, FL USA 33613-4706
tel : +1 813 974 4544; fax : +1 813 974 4575
e-mail : dsheehan@health.usf.edu

Yves Lecrubier, M.D. / Christian Even, M.D.
Centre Hospitalier Sainte-Anne
Clinique des Maladies Mentales de l'Encéphale
100 rue de la Santé, 75674 Paris Cedex 14, France
tel : +33 (0) 1 53 80 49 41; fax : +33 (0) 1 45 65 88 54
e-mail: ylecrubier@noos.fr or even-sainteanne@orange.fr

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A. MAJOR DEPRESSIVE EPISODE

(➔ MEANS : GO TO THE DIAGNOSTIC BOXES, CIRCLE **NO** IN ALL DIAGNOSTIC BOXES, AND MOVE TO THE NEXT MODULE)

A1	a	Were you <u>ever</u> depressed or down, most of the day, nearly every day, for two weeks? IF NO, CODE NO TO A1b : IF YES ASK:	NO	YES
	b	For the <u>past two weeks</u> , were you depressed or down, most of the day, nearly every day?	NO	YES
A2	a	Were you <u>ever</u> much less interested in most things or much less able to enjoy the things you used to enjoy most of the time, for two weeks? IF NO, CODE NO TO A2b : IF YES ASK:	NO	YES
	b	In the <u>past two weeks</u> , were you much less interested in most things or much less able to enjoy the things you used to enjoy, most of the time? IS A1a OR A2a CODED YES?	NO	YES

A3 IF **A1b** OR **A2b** = YES: EXPLORE THE CURRENT AND THE MOST SYMPTOMATIC PAST EPISODE, OTHERWISE IF **A1b** AND **A2b** = NO: EXPLORE ONLY THE MOST SYMPTOMATIC PAST EPISODE

Over that two week period, when you felt depressed or uninterested:

	<u>Past 2 Weeks</u>		<u>Past Episode</u>		
a	Was your appetite decreased or increased nearly every day? Did your weight decrease or increase without trying intentionally (i.e., by $\pm 5\%$ of body weight or ± 8 lb or ± 3.5 kg, for a 160 lb/70 kg person in a month)? IF YES TO EITHER, CODE YES.	NO	YES	NO	YES
b	Did you have trouble sleeping nearly every night (difficulty falling asleep, waking up in the middle of the night, early morning wakening or sleeping excessively)?	NO	YES	NO	YES
c	Did you talk or move more slowly than normal or were you fidgety, restless or having trouble sitting still almost every day?	NO	YES	NO	YES
d	Did you feel tired or without energy almost every day?	NO	YES	NO	YES
e	Did you feel worthless or guilty almost every day? IF YES, ASK FOR EXAMPLES. THE EXAMPLES ARE CONSISTENT WITH A DELUSIONAL IDEA. Current Episode <input type="checkbox"/> No <input type="checkbox"/> Yes Past Episode <input type="checkbox"/> No <input type="checkbox"/> Yes	NO	YES	NO	YES
f	Did you have difficulty concentrating or making decisions almost every day?	NO	YES	NO	YES
g	Did you repeatedly consider hurting yourself, feel suicidal, or wish that you were dead? Did you attempt suicide or plan a suicide? IF YES TO EITHER, CODE YES.	NO	YES	NO	YES
A4	Did these symptoms cause significant problems at home, at work, socially, at school or in some other important way?	NO	YES	NO	YES
A5	In between 2 episodes of depression, did you ever have an interval of at least 2 months, without any significant depression or any significant loss of interest?	NO	YES	NO	YES

ARE **5** OR MORE ANSWERS (**A1-A3**) CODED **YES** AND IS **A4** CODED **YES** FOR THAT TIME FRAME?

SPECIFY IF THE EPISODE IS CURRENT AND / OR PAST.

IF **A5** IS CODED **YES**, CODE **YES** FOR RECURRENT.

NO	YES
MAJOR DEPRESSIVE EPISODE	
CURRENT	<input type="checkbox"/>
PAST	<input type="checkbox"/>
RECURRENT	<input type="checkbox"/>

A6 a How many episodes of depression did you have in your lifetime? _____

Between each episode there must be at least 2 months without any significant depression.

B. SUICIDALITY

Points

In the past month did you:

- B1 Suffer any accident? This includes taking too much of your medication accidentally.
IF NO TO B1, SKIP TO B2; IF YES, ASK B1a: NO YES 0
- B1a Plan or intend to hurt yourself in any accident either actively or passively
(e.g. by not avoiding a risk)?
IF NO TO B1a, SKIP TO B2; IF YES, ASK B1b: NO YES 0
- B1b Intend to die as a result of any accident? NO YES 0
- B2 Feel hopeless? NO YES 1
- B3 Think that you would be better off dead or wish you were dead? NO YES 1
- B4 Think about hurting or injuring yourself or have mental images of harming yourself,
with at least some intent or awareness that you might die as a result?
How many times? _____ NO YES 4
- B5 Think about suicide (killing yourself)?
How many times? _____ NO YES 6
IF NO TO B5, SKIP TO B7. OTHERWISE ASK:
- | Frequency | | Intensity | |
|--------------|--------------------------|-----------|--------------------------|
| Occasionally | <input type="checkbox"/> | Mild | <input type="checkbox"/> |
| Often | <input type="checkbox"/> | Moderate | <input type="checkbox"/> |
| Very often | <input type="checkbox"/> | Severe | <input type="checkbox"/> |
- B6 Feel unable to control these impulses? NO YES 8
- B7 Have a suicide method or plan in mind (e.g. how, when or where)?
IF NO TO B7, SKIP TO B9. NO YES 8
- B8 Intend to follow through on a suicide plan? NO YES 8
- B9 Intend to die as a result of a suicidal act? NO YES 8
- B10 Take any active steps to prepare to injure yourself or to prepare for a suicide attempt
in which you expected or intended to die?
How many times? _____ NO YES 9
- B11 Injure yourself on purpose without intending to kill yourself? NO YES 4
- B12 Attempt suicide (to kill yourself)?
A suicide attempt means you did something where you could possibly be injured,
with at least a slight intent to die.
IF NO, SKIP TO B13:
How many times? _____ NO YES 9
Hope to be rescued / survive
Expected / intended to die
- In your lifetime:**
- B13 Did you ever make a suicide attempt (try to kill yourself)? NO YES 4
“A suicide attempt is any self injurious behavior, with at least some intent (> 0) to die as a result or if intent can be inferred,
e.g. if it is clearly not an accident or the individual thinks the act could be lethal, even though denying intent.”
(C-CASA definition). Posner K et al. Am J Psychiatry 164:7, July 2007.

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IS AT LEAST 1 OF THE ABOVE (EXCEPT B1) CODED YES?

IF YES, ADD THE TOTAL POINTS FOR THE ANSWERS (B1-B13)
CHECKED 'YES' AND SPECIFY THE SUICIDALITY SCORE AS INDICATED IN THE DIAGNOSTIC BOX:

MAKE ANY ADDITIONAL COMMENTS ABOUT YOUR ASSESSMENT OF THIS PATIENT'S CURRENT
AND NEAR FUTURE SUICIDALITY IN THE SPACE BELOW:

NO	YES	
SUICIDALITY CURRENT		
1-8 points	Low	<input type="checkbox"/>
9-16 points	Moderate	<input type="checkbox"/>
≥ 17 points	High	<input type="checkbox"/>

C. MANIC AND HYPOMANIC EPISODES

(➔ MEANS : GO TO THE DIAGNOSTIC BOXES, CIRCLE NO IN MANIC AND HYPOMANIC DIAGNOSTIC BOXES, AND MOVE TO NEXT MODULE)

Do you have any family history of manic depressive illness or bipolar disorder, or any family member who had mood swings treated with a medication like lithium, sodium valproate (Depakote) or lamotrigine (Lamictal)? NO YES
 THIS QUESTION IS NOT A CRITERION FOR BIPOLAR DISORDER, BUT IS ASKED TO INCREASE THE CLINICIAN'S VIGILANCE ABOUT THE RISK FOR BIPOLAR DISORDER .
 IF YES, PLEASE SPECIFY WHO: _____

C1	a	Have you ever had a period of time when you were feeling 'up' or 'high' or 'hyper' or so full of energy or full of yourself that you got into trouble, - or that other people thought you were not your usual self? (Do not consider times when you were intoxicated on drugs or alcohol.)	NO	YES
<p style="font-size: small;">IF PATIENT IS PUZZLED OR UNCLEAR ABOUT WHAT YOU MEAN BY 'UP' OR 'HIGH' OR 'HYPER', CLARIFY AS FOLLOWS: By 'up' or 'high' or 'hyper' I mean: having elated mood; increased energy; needing less sleep; having rapid thoughts; being full of ideas; having an increase in productivity, motivation, creativity, or impulsive behavior; phoning or working excessively or spending more money.</p> <p style="font-size: small;">IF NO, CODE NO TO C1b: IF YES ASK:</p>				
	b	Are you currently feeling 'up' or 'high' or 'hyper' or full of energy?	NO	YES
C2	a	Have you ever been persistently irritable, for several days, so that you had arguments or verbal or physical fights, or shouted at people outside your family? Have you or others noticed that you have been more irritable or over reacted, compared to other people, even in situations that you felt were justified?	NO	YES
<p style="font-size: small;">IF NO, CODE NO TO C2b: IF YES ASK:</p>				
	b	Are you currently feeling persistently irritable?	NO	YES
<p style="font-size: small;">IS C1a OR C2a CODED YES?</p>			NO	YES

C3 IF C1b or C2b = YES: EXPLORE THE CURRENT AND THE MOST SYMPTOMATIC PAST EPISODE, OTHERWISE IF C1b AND C2b = NO: EXPLORE ONLY THE MOST SYMPTOMATIC PAST EPISODE

During the times when you felt high, full of energy, or irritable did you:

	<u>Current Episode</u>		<u>Past Episode</u>	
	NO	YES	NO	YES
a	Feel that you could do things others couldn't do, or that you were an especially important person? If YES, ASK FOR EXAMPLES. <small>THE EXAMPLES ARE CONSISTENT WITH A DELUSIONAL IDEA. Current Episode <input type="checkbox"/> No <input type="checkbox"/> Yes Past Episode <input type="checkbox"/> No <input type="checkbox"/> Yes</small>			
b	Need less sleep (for example, feel rested after only a few hours sleep)?		NO	YES
c	Talk too much without stopping, or so fast that people had difficulty understanding?		NO	YES
d	Have racing thoughts?		NO	YES

	<u>Current Episode</u>		<u>Past Episode</u>	
e Become easily distracted so that any little interruption could distract you?	NO	YES	NO	YES
f Have a significant increase in your activity or drive, at work, at school, socially or sexually or did you become physically or mentally restless?	NO	YES	NO	YES
g Want so much to engage in pleasurable activities that you ignored the risks or consequences (for example, spending sprees, reckless driving, or sexual indiscretions)?	NO	YES	NO	YES
C3 SUMMARY: WHEN RATING CURRENT EPISODE: IF C1b IS NO, ARE 4 OR MORE C3 ANSWERS CODED YES? IF C1b IS YES, ARE 3 OR MORE C3 ANSWERS CODED YES?	NO	YES	NO	YES
WHEN RATING PAST EPISODE: IF C1a IS NO, ARE 4 OR MORE C3 ANSWERS CODED YES? IF C1a IS YES, ARE 3 OR MORE C3 ANSWERS CODED YES?				
CODE YES ONLY IF THE ABOVE 3 OR 4 SYMPTOMS OCCURRED DURING THE SAME TIME PERIOD.				
RULE: ELATION/EXPANSIVENESS REQUIRES ONLY THREE C3 SYMPTOMS, WHILE IRRITABLE MOOD ALONE REQUIRES 4 OF THE C3 SYMPTOMS.				
C4	What is the longest time these symptoms lasted?			
	a) 3 days or less	<input type="checkbox"/>		<input type="checkbox"/>
	b) 4 to 6 days	<input type="checkbox"/>		<input type="checkbox"/>
	c) 7 days or more	<input type="checkbox"/>		<input type="checkbox"/>
C5	Were you hospitalized for these problems?		NO	YES
	IF YES, STOP HERE AND CIRCLE YES IN MANIC EPISODE FOR THAT TIME FRAME.			
C6	Did these symptoms cause significant problems at home, at work, socially in your relationships with others, at school or in some other important way?		NO	YES

ARE C3 SUMMARY AND C5 AND C6 CODED YES?

OR

ARE C3 SUMMARY AND C4c AND C6 CODED YES AND IS C5 CODED NO?

SPECIFY IF THE EPISODE IS CURRENT AND / OR PAST.

NO	YES
MANIC EPISODE	
CURRENT	<input type="checkbox"/>
PAST	<input type="checkbox"/>

IS **C3** SUMMARY CODED **YES** AND ARE **C5** AND **C6** CODED **NO** AND IS EITHER **C4b** OR **C4c** CODED **YES**?

OR

ARE **C3** SUMMARY AND **C4b** AND **C6** CODED **YES** AND IS **C5** CODED **NO**?

SPECIFY IF THE EPISODE IS CURRENT AND / OR PAST.

IF **YES** TO CURRENT MANIC EPISODE, THEN CODE CURRENT HYPOMANIC EPISODE AS **NO**.

IF **YES** TO PAST MANIC EPISODE, THEN CODE PAST HYPOMANIC EPISODE AS **NOT EXPLORED**.

HYPOMANIC EPISODE

CURRENT **NO**
 YES

PAST **NO**
 YES
 NOT EXPLORED

ARE **C3** SUMMARY AND **C4a** CODED **YES** AND IS **C5** CODED **NO**?

SPECIFY IF THE EPISODE IS CURRENT AND / OR PAST.

IF **YES** TO CURRENT MANIC EPISODE OR HYPOMANIC EPISODE,
THEN CODE CURRENT HYPOMANIC SYMPTOMS AS **NO**.

IF **YES** TO PAST MANIC EPISODE OR YES TO PAST HYPOMANIC EPISODE,
THEN CODE PAST HYPOMANIC SYMPTOMS AS **NOT EXPLORED**.

HYPOMANIC SYMPTOMS

CURRENT **NO**
 YES

PAST **NO**
 YES
 NOT EXPLORED

- C7 a) IF MANIC EPISODE IS POSITIVE FOR EITHER CURRENT OR PAST ASK:
Did you have 2 or more of these (manic) episodes lasting 7 days or more (**C4c**) in your lifetime (including the current episode if present)? NO YES
- b) IF MANIC OR HYPOMANIC EPISODE IS POSITIVE FOR EITHER CURRENT OR PAST ASK:
Did you have 2 or more of these (hypomanic) episodes lasting just 4 to 6 days (**C4b**) in your lifetime (including the current episode)? NO YES
- c) IF THE PAST "HYPOMANIC SYMPTOMS" CATEGORY IS CODED POSITIVE ASK:
Did you have these hypomanic symptoms lasting only 1 to 3 days (**C4a**) 2 or more times in your lifetime, (including the current episode if present)? NO YES

D. PANIC DISORDER

(⇒ MEANS : CIRCLE NO IN D5, D6 AND D7 AND SKIP TO E1)

D1	<p>a Have you, on more than one occasion, had spells or attacks when you suddenly felt anxious, frightened, uncomfortable or uneasy, even in situations where most people would not feel that way?</p> <p>b Did the spells surge to a peak within 10 minutes of starting?</p>	<p>⇒ NO</p> <p>⇒ NO</p>	<p>YES</p> <p>YES</p>
D2	At any time in the past, did any of those spells or attacks come on unexpectedly or occur in an unpredictable or unprovoked manner?	⇒ NO	YES
D3	Have you ever had one such attack followed by a month or more of persistent concern about having another attack, or worries about the consequences of the attack - or did you make a significant change in your behavior because of the attacks (e.g., shopping only with a companion, not wanting to leave your house, visiting the emergency room repeatedly, or seeing your doctor more frequently because of the symptoms)?	NO	YES
D4	During the worst attack that you can remember:		
	a Did you have skipping, racing or pounding of your heart?	NO	YES
	b Did you have sweating or clammy hands?	NO	YES
	c Were you trembling or shaking?	NO	YES
	d Did you have shortness of breath or difficulty breathing?	NO	YES
	e Did you have a choking sensation or a lump in your throat?	NO	YES
	f Did you have chest pain, pressure or discomfort?	NO	YES
	g Did you have nausea, stomach problems or sudden diarrhea?	NO	YES
	h Did you feel dizzy, unsteady, lightheaded or faint?	NO	YES
	i Did things around you feel strange, unreal, detached or unfamiliar, or did you feel outside of or detached from part or all of your body?	NO	YES
	j Did you fear that you were losing control or going crazy?	NO	YES
	k Did you fear that you were dying?	NO	YES
	l Did you have tingling or numbness in parts of your body?	NO	YES
	m Did you have hot flushes or chills?	NO	YES
D5	ARE BOTH D3 , AND 4 OR MORE D4 ANSWERS, CODED YES? IF YES TO D5, SKIP TO D7.	NO	YES <i>PANIC DISORDER LIFETIME</i>
D6	IF D5 = NO, ARE ANY D4 ANSWERS CODED YES? THEN SKIP TO E1 .	NO	YES <i>LIMITED SYMPTOM ATTACKS LIFETIME</i>
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D7 In the past month, did you have such attacks repeatedly (2 or more), and did you have persistent concern about having another attack, or worry about the consequences of the attacks, or did you change your behavior in any way because of the attacks? NO YES
PANIC DISORDER CURRENT

E. AGORAPHOBIA

E1 Do you feel anxious or uneasy in places or situations where help might not be available or escape might be difficult, like being in a crowd, standing in a line (queue), when you are alone away from home or alone at home, or when crossing a bridge, or traveling in a bus, train or car or where you might have a panic attack or the panic-like symptoms we just spoke about? NO YES

IF E1 = NO, CIRCLE NO IN E2.

E2 Do you fear these situations so much that you avoid them, or suffer through them, or need a companion to face them? NO YES
AGORAPHOBIA CURRENT

IS E2 (CURRENT AGORAPHOBIA) CODED YES
 and
 IS D7 (CURRENT PANIC DISORDER) CODED YES?

NO YES
***PANIC DISORDER
 with Agoraphobia
 CURRENT***

IS E2 (CURRENT AGORAPHOBIA) CODED NO
 and
 IS D7 (CURRENT PANIC DISORDER) CODED YES?

NO YES
***PANIC DISORDER
 without Agoraphobia
 CURRENT***

IS E2 (CURRENT AGORAPHOBIA) CODED YES
 and
 IS D5 (PANIC DISORDER LIFETIME) CODED NO?

NO YES
***AGORAPHOBIA, CURRENT
 without history of
 Panic Disorder***

F. SOCIAL PHOBIA (Social Anxiety Disorder)

(➔ MEANS : GO TO THE DIAGNOSTIC BOX, CIRCLE NO AND MOVE TO THE NEXT MODULE)

F1	In the past month, did you have persistent fear and significant anxiety at being watched, being the focus of attention, or of being humiliated or embarrassed? This includes things like speaking in public, eating in public or with others, writing while someone watches, or being in social situations.	➔ NO	YES
----	---	---------	-----

F2	Is this social fear excessive or unreasonable and does it almost always make you anxious?	➔ NO	YES
----	---	---------	-----

F3	Do you fear these social situations so much that you avoid them or suffer through them most of the time?	➔ NO	YES
----	--	---------	-----

F4	Do these social fears disrupt your normal work, school or social functioning or cause you significant distress?		
----	---	--	--

SUBTYPES

Do you fear and avoid 4 or more social situations?

If YES Generalized social phobia (social anxiety disorder)

If NO Non-generalized social phobia (social anxiety disorder)

EXAMPLES OF SUCH SOCIAL SITUATIONS TYPICALLY INCLUDE

- INITIATING OR MAINTAINING A CONVERSATION,
- PARTICIPATING IN SMALL GROUPS,
- DATING,
- SPEAKING TO AUTHORITY FIGURES,
- ATTENDING PARTIES,
- PUBLIC SPEAKING,
- EATING IN FRONT OF OTHERS,
- URINATING IN A PUBLIC WASHROOM, ETC.

NOTE TO INTERVIEWER: PLEASE ASSESS WHETHER THE SUBJECT'S FEARS ARE RESTRICTED TO NON-GENERALIZED ("ONLY 1 OR SEVERAL") SOCIAL SITUATIONS OR EXTEND TO GENERALIZED ("MOST") SOCIAL SITUATIONS. "MOST" SOCIAL SITUATIONS IS USUALLY OPERATIONALIZED TO MEAN 4 OR MORE SOCIAL SITUATIONS, ALTHOUGH THE DSM-IV DOES NOT EXPLICITLY STATE THIS.

NO	YES
SOCIAL PHOBIA <i>(Social Anxiety Disorder)</i>	
CURRENT	
GENERALIZED	<input type="checkbox"/>
NON-GENERALIZED	<input type="checkbox"/>

G. OBSESSIVE-COMPULSIVE DISORDER

(➡ MEANS: GO TO THE DIAGNOSTIC BOX, CIRCLE NO AND MOVE TO THE NEXT MODULE)

G1	In the past month, have you been bothered by recurrent thoughts, impulses, or images that were unwanted, distasteful, inappropriate, intrusive, or distressing? - (For example, the idea that you were dirty, contaminated or had germs, or fear of contaminating others, or fear of harming someone even though it disturbs or distresses you, or fear you would act on some impulse, or fear or superstitions that you would be responsible for things going wrong, or obsessions with sexual thoughts, images or impulses, or hoarding, collecting, or religious obsessions.) (DO NOT INCLUDE SIMPLY EXCESSIVE WORRIES ABOUT REAL LIFE PROBLEMS. DO NOT INCLUDE OBSESSIONS DIRECTLY RELATED TO EATING DISORDERS, SEXUAL DEVIATIONS, PATHOLOGICAL GAMBLING, OR ALCOHOL OR DRUG ABUSE BECAUSE THE PATIENT MAY DERIVE PLEASURE FROM THE ACTIVITY AND MAY WANT TO RESIST IT ONLY BECAUSE OF ITS NEGATIVE CONSEQUENCES.)	NO YES ↓ SKIP TO G4
G2	Did they keep coming back into your mind even when you tried to ignore or get rid of them?	NO YES ↓ SKIP TO G4
G3	Do you think that these obsessions are the product of your own mind and that they are not imposed from the outside?	NO YES <input type="checkbox"/> obsessions
G4	In the past month, did you do something repeatedly without being able to resist doing it, like washing or cleaning excessively, counting or checking things over and over, or repeating, collecting, arranging things, or other superstitious rituals?	NO YES <input type="checkbox"/> compulsions
	IS G3 OR G4 CODED YES?	➡ NO YES ➡
G5	At any point, did you recognize that either these obsessive thoughts or these compulsive behaviors were excessive or unreasonable?	NO YES
G6	In the past month, did these obsessive thoughts and/or compulsive behaviors significantly interfere with your normal routine, your work or school, your usual social activities, or relationships, or did they take more than one hour a day?	<div style="border: 2px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> NO YES O.C.D. CURRENT </div>

H. POSTTRAUMATIC STRESS DISORDER

(➡ MEANS : GO TO THE DIAGNOSTIC BOX, CIRCLE NO, AND MOVE TO THE NEXT MODULE)

H1	Have you ever experienced or witnessed or had to deal with an extremely traumatic event that included actual or threatened death or serious injury to you or someone else?	➡ NO	YES
EXAMPLES OF TRAUMATIC EVENTS INCLUDE: SERIOUS ACCIDENTS, SEXUAL OR PHYSICAL ASSAULT, A TERRORIST ATTACK, BEING HELD HOSTAGE, KIDNAPPING, FIRE, DISCOVERING A BODY, WAR, OR NATURAL DISASTER, WITNESSING THE VIOLENT OR SUDDEN DEATH OF SOMEONE CLOSE TO YOU, OR A LIFE THREATENING ILLNESS.			
H2	Did you respond with intense fear, helplessness or horror?	➡ NO	YES
H3	During the past month, have you re-experienced the event in a distressing way (such as in dreams, intense recollections, flashbacks or physical reactions) or did you have intense distress when you were reminded about the event or exposed to a similar event?	➡ NO	YES

H4	In the past month:		
	a Have you avoided thinking about or talking about the event ?	NO	YES
	b Have you avoided activities, places or people that remind you of the event?	NO	YES
	c Have you had trouble recalling some important part of what happened?	NO	YES
	d Have you become much less interested in hobbies or social activities?	NO	YES
	e Have you felt detached or estranged from others?	NO	YES
	f Have you noticed that your feelings are numbed?	NO	YES
	g Have you felt that your life will be shortened or that you will die sooner than other people?	NO	YES
	ARE 3 OR MORE H4 ANSWERS CODED YES?	➡ NO	YES

H5	In the past month:		
	a Have you had difficulty sleeping?	NO	YES
	b Were you especially irritable or did you have outbursts of anger?	NO	YES
	c Have you had difficulty concentrating?	NO	YES
	d Were you nervous or constantly on your guard?	NO	YES
	e Were you easily startled?	NO	YES
	ARE 2 OR MORE H5 ANSWERS CODED YES?	➡ NO	YES

H6	During the past month, have these problems significantly interfered with your work, school or social activities, or caused significant distress?		
----	--	--	--

NO YES

**POSTTRAUMATIC
STRESS DISORDER
CURRENT**

I. ALCOHOL DEPENDENCE / ABUSE

(➡ MEANS: GO TO DIAGNOSTIC BOXES, CIRCLE NO IN BOTH AND MOVE TO THE NEXT MODULE)

I1	In the past 12 months, have you had 3 or more alcoholic drinks, - within a 3 hour period, - on 3 or more occasions?	➡ NO	YES
----	---	---------	-----

I2	In the past 12 months:		
	a Did you need to drink a lot more in order to get the same effect that you got when you first started drinking or did you get much less effect with continued use of the same amount?	NO	YES
	b When you cut down on drinking did your hands shake, did you sweat or feel agitated? Did you drink to avoid these symptoms (for example, "the shakes", sweating or agitation) or to avoid being hungover? <small>IF YES TO ANY, CODE YES.</small>	NO	YES
	c During the times when you drank alcohol, did you end up drinking more than you planned when you started?	NO	YES
	d Have you tried to reduce or stop drinking alcohol but failed?	NO	YES
	e On the days that you drank, did you spend substantial time obtaining alcohol, drinking, or recovering from the effects of alcohol?	NO	YES
	f Did you spend less time working, enjoying hobbies, or being with others because of your drinking?	NO	YES
	g If your drinking caused you health or mental problems, did you still keep on drinking?	NO	YES

ARE 3 OR MORE I2 ANSWERS CODED YES?

* IF YES, SKIP I3 QUESTIONS AND GO TO NEXT MODULE. "DEPENDENCE PREEMPTS ABUSE" IN DSM IV TR.

NO	YES*
ALCOHOL DEPENDENCE CURRENT	

I3	In the past 12 months:		
	a Have you been intoxicated, high, or hungover more than once when you had other responsibilities at school, at work, or at home? Did this cause any problems? <small>(CODE YES ONLY IF THIS CAUSED PROBLEMS.)</small>	NO	YES
	b Were you intoxicated more than once in any situation where you were physically at risk, for example, driving a car, riding a motorbike, using machinery, boating, etc.?	NO	YES
	c Did you have legal problems more than once because of your drinking, for example, an arrest or disorderly conduct?	NO	YES
	d If your drinking caused problems with your family or other people, did you still keep on drinking?	NO	YES

ARE 1 OR MORE I3 ANSWERS CODED YES?

NO	YES
<i>ALCOHOL ABUSE CURRENT</i>	

J. SUBSTANCE DEPENDENCE / ABUSE (NON-ALCOHOL)

(➔ MEANS : GO TO THE DIAGNOSTIC BOXES, CIRCLE NO IN ALL DIAGNOSTIC BOXES, AND MOVE TO THE NEXT MODULE)

Now I am going to show you / read to you a list of street drugs or medicines.

J1	a	In the past 12 months, did you take any of these drugs more than once, to get high, to feel elated, to get "a buzz" or to change your mood?	➔	NO	YES
----	---	---	---	----	-----

CIRCLE EACH DRUG TAKEN:

Stimulants: amphetamines, "speed", crystal meth, "crank", "rush", Dexedrine, Ritalin, diet pills.

Cocaine: snorting, IV, freebase, crack, "speedball".

Narcotics: heroin, morphine, Dilaudid, opium, Demerol, methadone, Darvon, codeine, Percodan, Vicodin, OxyContin.

Hallucinogens: LSD ("acid"), mescaline, peyote, psilocybin, STP, "mushrooms", "ecstasy", MDA, MDMA.

Phencyclidine: PCP ("Angel Dust", "Peace Pill", "Tranq", "Hog"), or ketamine ("Special K").

Inhalants: "glue", ethyl chloride, "rush", nitrous oxide ("laughing gas"), amyl or butyl nitrate ("poppers").

Cannabis: marijuana, hashish ("hash"), THC, "pot", "grass", "weed", "reefer".

Tranquilizers: Quaalude, Seconal ("reds"), Valium, Xanax, Librium, Ativan, Dalmane, Halcion, barbiturates, Miltown, GHB, Roofinol, "Roofies".

Miscellaneous: steroids, nonprescription sleep or diet pills. Cough Medicine? Any others?

SPECIFY THE MOST USED DRUG(S): _____

WHICH DRUG(S) CAUSE THE BIGGEST PROBLEMS?: _____

FIRST EXPLORE THE DRUG CAUSING THE BIGGEST PROBLEMS AND MOST LIKELY TO MEET DEPENDENCE / ABUSE CRITERIA.

IF MEETS CRITERIA FOR ABUSE OR DEPENDENCE, SKIP TO THE NEXT MODULE. OTHERWISE, EXPLORE THE NEXT MOST PROBLEMATIC DRUG.

J2	Considering your use of (NAME THE DRUG / DRUG CLASS SELECTED), in the past 12 months:				
	a	Have you found that you needed to use much more (NAME OF DRUG / DRUG CLASS SELECTED) to get the same effect that you did when you first started taking it?	NO	YES	
	b	When you reduced or stopped using (NAME OF DRUG / DRUG CLASS SELECTED), did you have withdrawal symptoms (aches, shaking, fever, weakness, diarrhea, nausea, sweating, heart pounding, difficulty sleeping, or feeling agitated, anxious, irritable, or depressed)? Did you use any drug(s) to keep yourself from getting sick (withdrawal symptoms) or so that you would feel better?	NO	YES	
		IF YES TO EITHER, CODE YES.			
	c	Have you often found that when you used (NAME OF DRUG / DRUG CLASS SELECTED), you ended up taking more than you thought you would?	NO	YES	
	d	Have you tried to reduce or stop taking (NAME OF DRUG / DRUG CLASS SELECTED) but failed?	NO	YES	
	e	On the days that you used (NAME OF DRUG / DRUG CLASS SELECTED), did you spend substantial time (>2 HOURS), obtaining, using or recovering from the drug, or thinking about the drug?	NO	YES	
	f	Did you spend less time working, enjoying hobbies, or being with family or friends because of your drug use?	NO	YES	
	g	If (NAME OF DRUG / DRUG CLASS SELECTED) caused you health or mental problems, did you still keep on using it?	NO	YES	

ARE 3 OR MORE J2 ANSWERS CODED YES?

SPECIFY DRUG(S): _____

* IF YES, SKIP J3 QUESTIONS, MOVE TO NEXT DISORDER.
"DEPENDENCE PREEMPTS ABUSE" IN DSM IV TR.

NO	YES *
<i>SUBSTANCE DEPENDENCE</i> CURRENT	

Considering your use of (NAME THE DRUG CLASS SELECTED), in the past 12 months:

- | | | | | |
|----|---|--|----|-----|
| J3 | a | Have you been intoxicated, high, or hungover from (NAME OF DRUG / DRUG CLASS SELECTED) more than once, when you had other responsibilities at school, at work, or at home? Did this cause any problem?

(CODE YES ONLY IF THIS CAUSED PROBLEMS.) | NO | YES |
| | b | Have you been high or intoxicated from (NAME OF DRUG / DRUG CLASS SELECTED) more than once in any situation where you were physically at risk (for example, driving a car, riding a motorbike, using machinery, boating, etc.)? | NO | YES |
| | c | Did you have legal problems more than once because of your drug use, for example, an arrest or disorderly conduct? | NO | YES |
| | d | If (NAME OF DRUG / DRUG CLASS SELECTED) caused problems with your family or other people, did you still keep on using it? | NO | YES |

ARE 1 OR MORE J3 ANSWERS CODED YES?

SPECIFY DRUG(S): _____

NO	YES
<i>SUBSTANCE ABUSE</i> CURRENT	

K. PSYCHOTIC DISORDERS AND MOOD DISORDER WITH PSYCHOTIC FEATURES

ASK FOR AN EXAMPLE OF EACH QUESTION ANSWERED POSITIVELY. CODE YES ONLY IF THE EXAMPLES CLEARLY SHOW A DISTORTION OF THOUGHT OR OF PERCEPTION OR IF THEY ARE NOT CULTURALLY APPROPRIATE. BEFORE CODING, INVESTIGATE WHETHER DELUSIONS QUALIFY AS "BIZARRE".

DELUSIONS ARE "BIZARRE" IF: CLEARLY IMPLAUSIBLE, ABSURD, NOT UNDERSTANDABLE, AND CANNOT DERIVE FROM ORDINARY LIFE EXPERIENCE.

HALLUCINATIONS ARE SCORED "BIZARRE" IF: A VOICE COMMENTS ON THE PERSON'S THOUGHTS OR BEHAVIOR, OR WHEN TWO OR MORE VOICES ARE CONVERSING WITH EACH OTHER. THE PURPOSE OF THIS MODULE IS TO EXCLUDE PATIENTS WITH PSYCHOTIC DISORDERS. THIS MODULE NEEDS EXPERIENCE.

			BIZARRE
Now I am going to ask you about unusual experiences that some people have.			
K1	a	Have you ever believed that people were spying on you, or that someone was plotting against you, or trying to hurt you? <small>NOTE: ASK FOR EXAMPLES TO RULE OUT ACTUAL STALKING.</small>	NO YES YES
	b	IF YES OR YES BIZARRE: do you currently believe these things?	NO YES YES ↳K6
K2	a	Have you ever believed that someone was reading your mind or could hear your thoughts, or that you could actually read someone's mind or hear what another person was thinking?	NO YES YES
	b	IF YES OR YES BIZARRE: do you currently believe these things?	NO YES YES ↳K6
K3	a	Have you ever believed that someone or some force outside of yourself put thoughts in your mind that were not your own, or made you act in a way that was not your usual self? Have you ever felt that you were possessed? <small>CLINICIAN: ASK FOR EXAMPLES AND DISCOUNT ANY THAT ARE NOT PSYCHOTIC.</small>	NO YES YES
	b	IF YES OR YES BIZARRE: do you currently believe these things?	NO YES YES ↳K6
K4	a	Have you ever believed that you were being sent special messages through the TV, radio, internet, newspapers, books, or magazines or that a person you did not personally know was particularly interested in you?	NO YES YES
	b	IF YES OR YES BIZARRE: do you currently believe these things?	NO YES YES ↳K6
K5	a	Have your relatives or friends ever considered any of your beliefs odd or unusual? <small>INTERVIEWER: ASK FOR EXAMPLES. ONLY CODE YES IF THE EXAMPLES ARE CLEARLY DELUSIONAL IDEAS NOT EXPLORED IN QUESTIONS K1 TO K4, FOR EXAMPLE, SOMATIC OR RELIGIOUS DELUSIONS OR DELUSIONS OF GRANDIOSITY, JEALOUSY, GUILT, RUIN OR DESTITUTION, ETC.</small>	NO YES YES
	b	IF YES OR YES BIZARRE: do they currently consider your beliefs strange?	NO YES YES
K6	a	Have you ever heard things other people couldn't hear, such as voices?	NO YES
		IF YES TO VOICE HALLUCINATION: Was the voice commenting on your thoughts or behavior or did you hear two or more voices talking to each other?	NO YES
	b	IF YES OR YES BIZARRE TO K6a: have you heard sounds / voices in the past month?	NO YES
		IF YES TO VOICE HALLUCINATION: Was the voice commenting on your thoughts or behavior or did you hear two or more voices talking to each other?	NO YES ↳K8b
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K7 a Have you ever had visions when you were awake or have you ever seen things other people couldn't see? NO YES
CLINICIAN: CHECK TO SEE IF THESE ARE CULTURALLY INAPPROPRIATE.

b IF YES: have you seen these things in the past month? NO YES

CLINICIAN'S JUDGMENT

K8 b IS THE PATIENT CURRENTLY EXHIBITING INCOHERENCE, DISORGANIZED SPEECH, OR MARKED LOOSENING OF ASSOCIATIONS? NO YES

K9 b IS THE PATIENT CURRENTLY EXHIBITING DISORGANIZED OR CATATONIC BEHAVIOR? NO YES

K10 b ARE NEGATIVE SYMPTOMS OF SCHIZOPHRENIA, E.G. SIGNIFICANT AFFECTIVE FLATTENING, POVERTY OF SPEECH (ALOGIA) OR AN INABILITY TO INITIATE OR PERSIST IN GOAL-DIRECTED ACTIVITIES (AVOLITION), PROMINENT DURING THE INTERVIEW? NO YES

K11 a ARE 1 OR MORE « a » QUESTIONS FROM K1a TO K7a CODED YES OR YES BIZARRE AND IS EITHER:

MAJOR DEPRESSIVE EPISODE, (CURRENT, RECURRENT OR PAST)
 OR
 MANIC OR HYPOMANIC EPISODE, (CURRENT OR PAST) CODED YES?

NO YES
 ↳ K13

IF NO TO K11 a, CIRCLE NO IN BOTH 'MOOD DISORDER WITH PSYCHOTIC FEATURES' DIAGNOSTIC BOXES AND MOVE TO K13.

b You told me earlier that you had period(s) when you felt (depressed/high/persistently irritable).

Were the beliefs and experiences you just described (SYMPTOMS CODED YES FROM K1a TO K7a) restricted exclusively to times when you were feeling depressed/high/irritable?

IF THE PATIENT EVER HAD A PERIOD OF AT LEAST 2 WEEKS OF HAVING THESE BELIEFS OR EXPERIENCES (PSYCHOTIC SYMPTOMS) WHEN THEY WERE NOT DEPRESSED/HIGH/IRRITABLE, CODE NO TO THIS DISORDER.

IF THE ANSWER IS NO TO THIS DISORDER, ALSO CIRCLE NO TO K12 AND MOVE TO K13

NO	YES
MOOD DISORDER WITH PSYCHOTIC FEATURES	
LIFETIME	

K12 a ARE 1 OR MORE « b » QUESTIONS FROM K1b TO K7b CODED YES OR YES BIZARRE AND IS EITHER:

MAJOR DEPRESSIVE EPISODE, (CURRENT)
 OR
 MANIC OR HYPOMANIC EPISODE, (CURRENT) CODED YES?

IF THE ANSWER IS YES TO THIS DISORDER (LIFETIME OR CURRENT), CIRCLE NO TO K13 AND K14 AND MOVE TO THE NEXT MODULE.

NO	YES
MOOD DISORDER WITH PSYCHOTIC FEATURES	
CURRENT	

K13 ARE 1 OR MORE « b » QUESTIONS FROM K1b TO K6b, CODED YES BIZARRE?
OR
ARE 2 OR MORE « b » QUESTIONS FROM K1b TO K10b, CODED YES (RATHER THAN YES BIZARRE)?
AND DID AT LEAST TWO OF THE PSYCHOTIC SYMPTOMS OCCUR DURING THE SAME 1 MONTH PERIOD?

NO	YES
PSYCHOTIC DISORDER CURRENT	

K14 IS K13 CODED YES
OR
ARE 1 OR MORE « a » QUESTIONS FROM K1a TO K6a, CODED YES BIZARRE?
OR
ARE 2 OR MORE « a » QUESTIONS FROM K1a TO K7a, CODED YES (RATHER THAN YES BIZARRE)
AND DID AT LEAST TWO OF THE PSYCHOTIC SYMPTOMS OCCUR DURING THE SAME 1 MONTH PERIOD?

NO	YES
PSYCHOTIC DISORDER LIFETIME	

L. ANOREXIA NERVOSA

(➡ MEANS : GO TO THE DIAGNOSTIC BOX, CIRCLE NO, AND MOVE TO THE NEXT MODULE)

L1	a How tall are you?	<input type="text"/> ft <input type="text"/> in. <input type="text"/> <input type="text"/> <input type="text"/> cm <input type="text"/> <input type="text"/> <input type="text"/> lb <input type="text"/> <input type="text"/> <input type="text"/> kg
	b. What was your lowest weight in the past 3 months?	
	c IS PATIENT'S WEIGHT EQUAL TO OR BELOW THE THRESHOLD CORRESPONDING TO HIS / HER HEIGHT? (SEE TABLE BELOW)	➡ NO YES

In the past 3 months:

L2	In spite of this low weight, have you tried not to gain weight?	➡ NO YES
L3	Have you intensely feared gaining weight or becoming fat, even though you were underweight?	➡ NO YES
L4	a Have you considered yourself too big / fat or that part of your body was too big / fat? b Has your body weight or shape greatly influenced how you felt about yourself? c Have you thought that your current low body weight was normal or excessive?	NO YES NO YES NO YES
L5	ARE 1 OR MORE ITEMS FROM L4 CODED YES?	➡ NO YES
L6	FOR WOMEN ONLY: During the last 3 months, did you miss all your menstrual periods when they were expected to occur (when you were not pregnant)?	➡ NO YES

FOR WOMEN: ARE L5 AND L6 CODED YES?

FOR MEN: IS L5 CODED YES?

NO YES

**ANOREXIA NERVOSA
CURRENT**

HEIGHT / WEIGHT TABLE CORRESPONDING TO A BMI THRESHOLD OF 17.5 kg/m²

Height/Weight	4'9	4'10	4'11	5'0	5'1	5'2	5'3	5'4	5'5	5'6	5'7	5'8	5'9	5'10
ft/in	4'9	4'10	4'11	5'0	5'1	5'2	5'3	5'4	5'5	5'6	5'7	5'8	5'9	5'10
lb	81	84	87	89	92	96	99	102	105	108	112	115	118	122
cm	145	147	150	152	155	158	160	163	165	168	170	173	175	178
kg	37	38	39	41	42	43	45	46	48	49	51	52	54	55

Height/Weight	5'11	6'0	6'1	6'2	6'3
ft/in	5'11	6'0	6'1	6'2	6'3
lb	125	129	132	136	140
cm	180	183	185	188	191
kg	57	59	60	62	64

The weight thresholds above are calculated using a body mass index (BMI) equal to or below 17.5 kg/m² for the patient's height. This is the threshold guideline below which a person is deemed underweight by the DSM-IV and the ICD-10 Diagnostic Criteria for Research for Anorexia Nervosa.

M. BULIMIA NERVOSA

(➔ MEANS : GO TO THE DIAGNOSTIC BOXES, CIRCLE NO IN ALL DIAGNOSTIC BOXES, AND MOVE TO THE NEXT MODULE)

M1	In the past three months, did you have eating binges or times when you ate a very large amount of food within a 2-hour period?	➔	NO	YES
M2	In the last 3 months, did you have eating binges as often as twice a week?	➔	NO	YES
M3	During these binges, did you feel that your eating was out of control?	➔	NO	YES
M4	Did you do anything to compensate for, or to prevent a weight gain from these binges, like vomiting, fasting, exercising or taking laxatives, enemas, diuretics (fluid pills), or other medications?	➔	NO	YES
M5	Does your body weight or shape greatly influence how you feel about yourself?	➔	NO	YES
M6	DO THE PATIENT'S SYMPTOMS MEET CRITERIA FOR ANOREXIA NERVOSA?	➔	NO	YES
		↓	Skip to M8	
M7	Do these binges occur only when you are under (____lb/kg)? <small>INTERVIEWER: WRITE IN THE ABOVE PARENTHESIS THE THRESHOLD WEIGHT FOR THIS PATIENT'S HEIGHT FROM THE HEIGHT / WEIGHT TABLE IN THE ANOREXIA NERVOSA MODULE.</small>	➔	NO	YES

M8 IS M5 CODED YES AND IS EITHER M6 OR M7 CODED NO?

NO	YES
BULIMIA NERVOSA	
CURRENT	

IS M7 CODED YES?

NO	YES
ANOREXIA NERVOSA	
<i>Binge Eating/Purging Type</i>	
CURRENT	

N. GENERALIZED ANXIETY DISORDER

(➔ MEANS : GO TO THE DIAGNOSTIC BOX, CIRCLE NO, AND MOVE TO THE NEXT MODULE)

N1	a	Were you excessively anxious or worried about several routine things, over the past 6 months? IN ENGLISH, IF THE PATIENT IS UNCLEAR ABOUT WHAT YOU MEAN, PROBE BY ASKING (Do others think that you are a “worry wart”?) AND GET EXAMPLES.	➔ NO	YES
	b	Are these anxieties and worries present most days?	➔ NO	YES
		ARE THE PATIENT’S ANXIETY AND WORRIES RESTRICTED EXCLUSIVELY TO, OR BETTER EXPLAINED BY, ANY DISORDER PRIOR TO THIS POINT?	NO	➔ YES
N2		Do you find it difficult to control the worries?	➔ NO	YES
N3		FOR THE FOLLOWING, CODE NO IF THE SYMPTOMS ARE CONFINED TO FEATURES OF ANY DISORDER EXPLORED PRIOR TO THIS POINT. When you were anxious over the past 6 months, did you, most of the time:		
	a	Feel restless, keyed up or on edge?	NO	YES
	b	Have muscle tension?	NO	YES
	c	Feel tired, weak or exhausted easily?	NO	YES
	d	Have difficulty concentrating or find your mind going blank?	NO	YES
	e	Feel irritable?	NO	YES
	f	Have difficulty sleeping (difficulty falling asleep, waking up in the middle of the night, early morning waking or sleeping excessively)?	NO	YES
		ARE 3 OR MORE N3 ANSWERS CODED YES?	➔ NO	YES
N4		Do these anxieties and worries disrupt your normal work, school or social functioning or cause you significant distress?		

NO **YES**

**GENERALIZED ANXIETY
DISORDER
CURRENT**

O. RULE OUT MEDICAL, ORGANIC OR DRUG CAUSES FOR ALL DISORDERS

IF THE PATIENT CODES POSITIVE FOR ANY CURRENT DISORDER ASK:

Just before these symptoms began:

- O1a Were you taking any drugs or medicines? No Yes Uncertain
- O1b Did you have any medical illness? No Yes Uncertain

IN THE CLINICIAN’S JUDGMENT: ARE EITHER OF THESE LIKELY TO BE DIRECT CAUSES OF THE PATIENT’S DISORDER?
IF NECESSARY ASK ADDITIONAL OPEN-ENDED QUESTIONS.

- O2 **SUMMARY:** HAS AN ORGANIC CAUSE BEEN RULED OUT? No Yes Uncertain

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P. ANTISOCIAL PERSONALITY DISORDER

(➡ MEANS : GO TO THE DIAGNOSTIC BOX AND CIRCLE NO)

- P1 Before you were 15 years old, did you:**
- | | | |
|---|----|--------|
| a repeatedly skip school or run away from home overnight? | NO | YES |
| b repeatedly lie, cheat, "con" others, or steal? | NO | YES |
| c start fights or bully, threaten, or intimidate others? | NO | YES |
| d deliberately destroy things or start fires? | NO | YES |
| e deliberately hurt animals or people? | NO | YES |
| f force someone to have sex with you? | NO | YES |
| ARE 2 OR MORE P1 ANSWERS CODED YES? | ➡ | NO YES |

DO NOT CODE YES TO THE BEHAVIORS BELOW IF THEY ARE EXCLUSIVELY POLITICALLY OR RELIGIOUSLY MOTIVATED.

- P2 Since you were 15 years old, have you:**
- | | | |
|--|----|-----|
| a repeatedly behaved in a way that others would consider irresponsible, like failing to pay for things you owed, deliberately being impulsive or deliberately not working to support yourself? | NO | YES |
| b done things that are illegal even if you didn't get caught (for example, destroying property, shoplifting, stealing, selling drugs, or committing a felony)? | NO | YES |
| c been in physical fights repeatedly (including physical fights with your spouse or children)? | NO | YES |
| d often lied or "conned" other people to get money or pleasure, or lied just for fun? | NO | YES |
| e exposed others to danger without caring? | NO | YES |
| f felt no guilt after hurting, mistreating, lying to, or stealing from others, or after damaging property? | NO | YES |

ARE 3 OR MORE P2 QUESTIONS CODED YES?

NO	YES
ANTISOCIAL PERSONALITY DISORDER LIFETIME	

THIS CONCLUDES THE INTERVIEW

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Scientific committee for the MINI 6.0.0:

A. Carlo Altamura, Milano, Italy
 Cyril Hoschl, Praha, Czech Republic
 George Papadimitriou, Athens, Greece
 Hans Ågren, Göteborg, Sweden
 Hans-Jürgen Möller, München, Germany
 Hans-Ulrich Wittchen, Dresden, Germany
 István Bitter, Budapest, Hungary
 Jean-Pierre Lépine, Paris, France
 Jules Angst, Zurich, Switzerland
 Julio Bobes, Oviedo, Spain
 Luciano Conti, Pisa, Italy
 Marelli Colon-Soto MD, Puerto Rico, United States
 Michael Van Ameringen MD, Toronto, Canada
 Rosario Hidalgo MD, Tampa, United States
 Siegfried Kasper, Vienna, Austria
 Thomas Schlaepfer, Bonn, Germany

Translations

	<u>M.I.N.I. 4.4 or earlier versions</u>
Afrikaans	R. Emsley, W. Maartens
Arabic	
Bengali	
Braille (English)	
Brazilian Portuguese	P. Amorim
Bulgarian	L.G. Hranov
Chinese	
Czech	
Danish	P. Bech
Dutch/Flemish	E. Griez, K. Shruers, T. Overbeek, K. Demyttenaere
English	D. Sheehan, J. Janavs, R. Baker, K. Harnett-Sheehan, E. Knapp, M. Sheehan
Estonian	
Farsi/Persian	
Finnish	M. Heikkinen, M. Lijeström, O. Tuominen
French	Y. Lecrubier, E. Weiller, I. Bonora, P. Amorim, J.P. Lepine
German	I. v. Denffer, M. Ackenheil, R. Dietz-Bauer
Greek	S. Beratis
Gujarati	
Hebrew	J. Zohar, Y. Sasson
Hindi	
Hungarian	I. Bitter, J. Balazs
Icelandic	
Italian	I. Bonora, L. Conti, M. Piccinelli, M. Tansella, G. Cassano, Y. Lecrubier, P. Donda, E. Weiller
Japanese	

M.I.N.I. 4.6/5.0, M.I.N.I. Plus 4.6/5.0 and M.I.N.I. Screen 5.0:

O. Osman, E. Al-Radi
 H. Banerjee, A. Banerjee
 P. Amorim
 L. Carroll, Y-J. Lee, Y-S. Chen, C-C. Chen, C-Y. Liu, C-K. Wu, H-S. Tang, K-D. Juang, Yan-Ping Zheng.
 P. Svlosky
 P. Bech, T. Schütze
 I. Van Vliet, H. Leroy, H. van Megen
 D. Sheehan, R. Baker, J. Janavs, K. Harnett-Sheehan, M. Sheehan
 J. Shlik, A. Aluoja, E. Khil
 K. Khooshabi, A. Zomorodi
 M. Heikkinen, M. Lijeström, O. Tuominen
 Y. Lecrubier, E. Weiller, P. Amorim, T. Hergueta
 G. Stotz, R. Dietz-Bauer, M. Ackenheil
 T. Calligas, S. Beratis, GN Papidimitriou, T Matsoukas
 CR Soldatos
 M. Patel, B. Patel, Organon
 R. Barda, I. Levinson, A. Aviv
 C. Mittal, K. Batra, S. Gambhir, Organon
 I. Bitter, J. Balazs
 J.G. Stefansson
 L. Conti, A. Rossi, P. Donda
 T. Otsubo, H. Watanabe, H. Miyaoka, K. Kamijima, J. Shinoda, K. Tanaka, Y. Okajima

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Kannada		Organon
Korean		K.S. Oh and Korean Academy of Anxiety Disorders
Latvian	V. Janavs, J. Janavs, I. Nagobads	V. Janavs, J. Janavs
Lithuanian		A. Bacevicius
Luganda		WW. Muhweziosal, H. Agren
Malayalam		Organon
Marathi		Organon
Norwegian	G. Pedersen, S. Blomhoff	K.A. Leiknes, U. Malt, E. Malt, S. Leganger
Polish	M. Masiak, E. Jasiak	M. Masiak, E. Jasiak
Portuguese	P. Amorim	P. Amorim, T. Guterres
Punjabi		A. Gahunia, S. Gambhir
Romanian		O. Driga
Russian		A. Bystritsky, E. Selivra, M. Bystritsky, L. Shumyak, M. Klisinska.
Serbian	I. Timotijevic	I. Timotijevic
Setswana	K. Ketlogetswe	
Slovenian	M. Kocmur	
Spanish	L. Ferrando, J. Bobes-Garcia, J. Gilbert-Rahola, Y. Lecrubier	L. Ferrando, L. Franco-Alfonso, M. Soto, J. Bobes-Garcia, O. Soto, L. Franco, G. Heinze, C. Santana, R. Hidalgo
Swedish	M. Waern, S. Andersch, M. Humble	C. Allgulander, H. Agren M. Waern, A. Brimse, M. Humble.
Tamil		Organon
Telugu		Organon
Thai		P. Kittirattanapaiboon, S. Mahatnirunkul, P. Udomrat, P. Silpakit., M. Khamwongpin, S. Srikosai.
Turkish	T. Örnek, A. Keskiner, I. Vahip	T. Örnek, A. Keskiner, A.Engeler
Urdu		S. Gambhir
Yiddish		J. Goldman, Chana Pollack, Myrna Mniewski

A validation study of this instrument was made possible, in part, by grants from SmithKline Beecham and the European Commission. The authors are grateful to Dr. Pauline Powers for her advice on the modules on Anorexia Nervosa and Bulimia.

MOOD DISORDERS: DIAGNOSTIC ALGORITHM

Consult Modules: A Major Depressive Episode
 C (Hypo)manic Episode
 K Psychotic Disorders

MODULE K:

	1a	IS K11b CODED YES?	NO	YES
	1b	IS K12a CODED YES?	NO	YES

MODULES A and C:

			Current	Past
2	a	CIRCLE YES IF A DELUSIONAL IDEA IS IDENTIFIED IN A3e	YES	YES
	b	CIRCLE YES IF A DELUSIONAL IDEA IS IDENTIFIED IN C3a	YES	YES

c Is a Major Depressive Episode coded YES (current or past)?
 and
 is Manic Episode coded NO (current and past)?
 and
 is Hypomanic Episode coded NO (current and past)?
 and
 is "Hypomanic Symptoms" coded NO (current and past)?

Specify:

- If the depressive episode is **current** or **past** or both
- **With Psychotic Features** Current: If 1b or 2a (current) = YES
 With Psychotic Features Past: If 1a or 2a (past) = YES

MAJOR DEPRESSIVE DISORDER

	current	past
MDD	<input type="checkbox"/>	<input type="checkbox"/>
With Psychotic Features		
Current	<input type="checkbox"/>	
Past		<input type="checkbox"/>

Patient Name:	_____	Patient Number:	_____
Date of Birth:	_____	Time Interview Began:	_____
Interviewer's Name:	_____	Time Interview Ended:	_____
Date of Interview:	_____	Total Time:	_____

	MODULES	TIME FRAME	MEETS CRITERIA	DSM-IV-TR	ICD-10	PRIMARY DIAGNOSIS
A	MAJOR DEPRESSIVE EPISODE	Current (2 weeks)	<input type="checkbox"/>			
		Past	<input type="checkbox"/>			
		Recurrent	<input type="checkbox"/>			
	MAJOR DEPRESSIVE DISORDER	Current (2 weeks)	<input type="checkbox"/>	296.20-296.26 Single	F32.x	<input type="checkbox"/>
		Past	<input type="checkbox"/>	296.20-296.26 Single	F32.x	<input type="checkbox"/>
		Recurrent	<input type="checkbox"/>	296.30-296.36 Recurrent	F33.x	<input type="checkbox"/>
B	SUICIDALITY	Current (Past Month)	<input type="checkbox"/>			
		<input type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> High				
C	MANIC EPISODE	Current	<input type="checkbox"/>			
		Past	<input type="checkbox"/>			
	HYPOMANIC EPISODE	Current	<input type="checkbox"/>			
		Past	<input type="checkbox"/>	<input type="checkbox"/> Not Explored		
	BIPOLAR I DISORDER	Current	<input type="checkbox"/>	296.0x-296.6x	F30.x- F31.9	<input type="checkbox"/>
		Past	<input type="checkbox"/>	296.0x-296.6x	F30.x- F31.9	<input type="checkbox"/>
	BIPOLAR II DISORDER	Current	<input type="checkbox"/>	296.89	F31.8	<input type="checkbox"/>
		Past	<input type="checkbox"/>	296.89	F31.8	<input type="checkbox"/>
	BIPOLAR DISORDER NOS	Current	<input type="checkbox"/>	296.80	F31.9	<input type="checkbox"/>
		Past	<input type="checkbox"/>	296.80	F31.9	<input type="checkbox"/>
D	PANIC DISORDER	Current (Past Month)	<input type="checkbox"/>	300.01/300.21	F40.01-F41.0	<input type="checkbox"/>
		Lifetime	<input type="checkbox"/>			
E	AGORAPHOBIA	Current	<input type="checkbox"/>	300.22	F40.00	<input type="checkbox"/>
F	SOCIAL PHOBIA (Social Anxiety Disorder)	Current (Past Month)	<input type="checkbox"/>			
		Generalized	<input type="checkbox"/>	300.23	F40.1	<input type="checkbox"/>
		Non-Generalized	<input type="checkbox"/>	300.23	F40.1	<input type="checkbox"/>
G	OBSESSIVE-COMPULSIVE DISORDER	Current (Past Month)	<input type="checkbox"/>	300.3	F42.8	<input type="checkbox"/>
H	POSTTRAUMATIC STRESS DISORDER	Current (Past Month)	<input type="checkbox"/>	309.81	F43.1	<input type="checkbox"/>
I	ALCOHOL DEPENDENCE	Past 12 Months	<input type="checkbox"/>	303.9	F10.2x	<input type="checkbox"/>
	ALCOHOL ABUSE	Past 12 Months	<input type="checkbox"/>	305.00	F10.1	<input type="checkbox"/>
J	SUBSTANCE DEPENDENCE (Non-alcohol)	Past 12 Months	<input type="checkbox"/>	304.00-.90/305.20-.90	F11.1-F19.1	<input type="checkbox"/>
	SUBSTANCE ABUSE (Non-alcohol)	Past 12 Months	<input type="checkbox"/>	304.00-.90/305.20-.90	F11.1-F19.1	<input type="checkbox"/>
K	PSYCHOTIC DISORDERS	Lifetime	<input type="checkbox"/>	295.10-295.90/297.1/	F20.xx-F29	<input type="checkbox"/>
		Current	<input type="checkbox"/>	297.3/293.81/293.82/	293.89/298.8/298.9	
	MOOD DISORDER WITH PSYCHOTIC FEATURES	Lifetime	<input type="checkbox"/>	296.24/296.34/296.44	F32.3/F33.3/	<input type="checkbox"/>
		Current	<input type="checkbox"/>	296.24/296.34/296.44	F30.2/F31.2/F31.5	
					F31.8/F31.9/F39	<input type="checkbox"/>
L	ANOREXIA NERVOSA	Current (Past 3 Months)	<input type="checkbox"/>	307.1	F50.0	<input type="checkbox"/>
M	BULIMIA NERVOSA	Current (Past 3 Months)	<input type="checkbox"/>	307.51	F50.2	<input type="checkbox"/>
	ANOREXIA NERVOSA, BINGE EATING/PURGING TYPE	Current	<input type="checkbox"/>	307.1	F50.0	<input type="checkbox"/>
N	GENERALIZED ANXIETY DISORDER	Current (Past 6 Months)	<input type="checkbox"/>	300.02	F41.1	<input type="checkbox"/>
O	MEDICAL, ORGANIC, DRUG CAUSE RULED OUT		<input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> Uncertain			
P	ANTISOCIAL PERSONALITY DISORDER	Lifetime	<input type="checkbox"/>	301.7	F60.2	<input type="checkbox"/>

IDENTIFY THE PRIMARY DIAGNOSIS BY CHECKING THE APPROPRIATE CHECK BOX.
 (Which problem troubles you the most or dominates the others or came first in the natural history?) _____



The translation from DSM-IV-TR to ICD-10 coding is not always exact. For more information on this topic see Schulte-Markwort. Crosswalks ICD-10/DSM-IV-TR. Hogrefe & Huber Publishers 2006.

GENERAL INSTRUCTIONS

The M.I.N.I. was designed as a brief structured interview for the major Axis I psychiatric disorders in DSM-IV and ICD-10. Validation and reliability studies have been done comparing the M.I.N.I. to the SCID-P for DSM-III-R and the CIDI (a structured interview developed by the World Health Organization). The results of these studies show that the M.I.N.I. has similar reliability and validity properties, but can be administered in a much shorter period of time (mean 18.7 ± 11.6 minutes, median 15 minutes) than the above referenced instruments. It can be used by clinicians, after a brief training session. Lay interviewers require more extensive training.

INTERVIEW:

In order to keep the interview as brief as possible, inform the patient that you will conduct a clinical interview that is more structured than usual, with very precise questions about psychological problems which require a yes or no answer.

GENERAL FORMAT:

The M.I.N.I. is divided into **modules** identified by letters, each corresponding to a diagnostic category.

- At the beginning of each diagnostic module (except for psychotic disorders module), screening question(s) corresponding to the main criteria of the disorder are presented in a **gray box**.
- At the end of each module, diagnostic box(es) permit the clinician to indicate whether diagnostic criteria are met.

CONVENTIONS:

Sentences written in « normal font » should be read exactly as written to the patient in order to standardize the assessment of diagnostic criteria.

Sentences written in « CAPITALS » should not be read to the patient. They are instructions for the interviewer to assist in the scoring of the diagnostic algorithms.

Sentences written in « bold » indicate the time frame being investigated. The interviewer should read them as often as necessary. Only symptoms occurring during the time frame indicated should be considered in scoring the responses.

Answers with an arrow above them (➡) indicate that one of the criteria necessary for the diagnosis(es) is not met. In this case, the interviewer should go to the end of the module, circle « NO » in all the diagnostic boxes and move to the next module.

When terms are separated by a *slash (/)* the interviewer should read only those symptoms known to be present in the patient (for example, question G6).

Phrases in (parentheses) are clinical examples of the symptom. These may be read to the patient to clarify the question.

RATING INSTRUCTIONS:

All questions must be rated. The rating is done at the right of each question by circling either Yes or No. Clinical judgment by the rater should be used in coding the responses. Interviewers need to be sensitive to the diversity of cultural beliefs in their administration of questions and rating of responses. The rater should ask for examples when necessary, to ensure accurate coding. The patient should be encouraged to ask for clarification on any question that is not absolutely clear.

The clinician should be sure that each dimension of the question is taken into account by the patient (for example, time frame, frequency, severity, and/or alternatives).

Symptoms better accounted for by an organic cause or by the use of alcohol or drugs should not be coded positive in the M.I.N.I. The M.I.N.I. Plus has questions that investigate these issues.

For any questions, suggestions, need for a training session or information about updates of the M.I.N.I., please contact:

David V Sheehan, M.D., M.B.A.
University of South Florida College of Medicine
3515 East Fletcher Ave, Tampa, FL USA 33613-4706
tel : +1 813 974 4544; fax : +1 813 974 4575
e-mail : dsheehan@health.usf.edu

Yves Lecrubier, M.D. / Christian Even, M.D.
Centre Hospitalier Sainte-Anne
Clinique des Maladies Mentales de l'Encéphale
100 rue de la Santé, 75674 Paris Cedex 14, France
tel : +33 (0) 1 53 80 49 41; fax : +33 (0) 1 45 65 88 54
e-mail: ylecrubier@noos.fr or even-sainteanne@orange.fr

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A. MAJOR DEPRESSIVE EPISODE

(➡ MEANS : GO TO THE DIAGNOSTIC BOXES, CIRCLE **NO** IN ALL DIAGNOSTIC BOXES, AND MOVE TO THE NEXT MODULE)

A1	a	Were you <u>ever</u> depressed or down, most of the day, nearly every day, for two weeks? IF NO, CODE NO TO A1b : IF YES ASK:	NO	YES
	b	For the <u>past two weeks</u> , were you depressed or down, most of the day, nearly every day?	NO	YES
A2	a	Were you <u>ever</u> much less interested in most things or much less able to enjoy the things you used to enjoy most of the time, for two weeks? IF NO, CODE NO TO A2b : IF YES ASK:	NO	YES
	b	In the <u>past two weeks</u> , were you much less interested in most things or much less able to enjoy the things you used to enjoy, most of the time? IS A1a OR A2a CODED YES?	NO	YES

A3 IF **A1b** OR **A2b** = YES: EXPLORE THE CURRENT AND THE MOST SYMPTOMATIC PAST EPISODE, OTHERWISE IF **A1b** AND **A2b** = NO: EXPLORE ONLY THE MOST SYMPTOMATIC PAST EPISODE

Over that two week period, when you felt depressed or uninterested:

	<u>Past 2 Weeks</u>		<u>Past Episode</u>	
a				
b				
c				
d				
e				
f				
g				
A4				
A5				

ARE **5** OR MORE ANSWERS (**A1-A3**) CODED **YES** AND IS **A4** CODED **YES** FOR THAT TIME FRAME?

SPECIFY IF THE EPISODE IS CURRENT AND / OR PAST.

IF **A5** IS CODED **YES**, CODE **YES** FOR RECURRENT.

NO	YES
MAJOR DEPRESSIVE EPISODE	
CURRENT	<input type="checkbox"/>
PAST	<input type="checkbox"/>
RECURRENT	<input type="checkbox"/>

A6 a How many episodes of depression did you have in your lifetime? _____

Between each episode there must be at least 2 months without any significant depression.

B. SUICIDALITY

Points

In the past month did you:

- B1 Suffer any accident? This includes taking too much of your medication accidentally.
IF NO TO B1, SKIP TO B2; IF YES, ASK B1a: NO YES 0
- B1a Plan or intend to hurt yourself in any accident either actively or passively
(e.g. by not avoiding a risk)?
IF NO TO B1a, SKIP TO B2; IF YES, ASK B1b: NO YES 0
- B1b Intend to die as a result of any accident? NO YES 0
- B2 Feel hopeless? NO YES 1
- B3 Think that you would be better off dead or wish you were dead? NO YES 1
- B4 Think about hurting or injuring yourself or have mental images of harming yourself,
with at least some intent or awareness that you might die as a result?
NO YES 4
How many times? _____
- B5 Think about suicide (killing yourself)?
How many times? _____
IF NO TO B5, SKIP TO B7. OTHERWISE ASK: NO YES 6
- | | |
|---------------------------------------|-----------------------------------|
| Frequency | Intensity |
| Occasionally <input type="checkbox"/> | Mild <input type="checkbox"/> |
| Often <input type="checkbox"/> | Moderate <input type="checkbox"/> |
| Very often <input type="checkbox"/> | Severe <input type="checkbox"/> |
- B6 Feel unable to control these impulses? NO YES 8
- B7 Have a suicide method or plan in mind (e.g. how, when or where)?
IF NO TO B7, SKIP TO B9. NO YES 8
- B8 Intend to follow through on a suicide plan? NO YES 8
- B9 Intend to die as a result of a suicidal act? NO YES 8
- B10 Take any active steps to prepare to injure yourself or to prepare for a suicide attempt
in which you expected or intended to die?
How many times? _____ NO YES 9
- B11 Injure yourself on purpose without intending to kill yourself? NO YES 4
- B12 Attempt suicide (to kill yourself)?
A suicide attempt means you did something where you could possibly be injured,
with at least a slight intent to die.
IF NO, SKIP TO B13: NO YES 9
How many times? _____
Hope to be rescued / survive
Expected / intended to die
- In your lifetime:**
- B13 Did you ever make a suicide attempt (try to kill yourself)? NO YES 4
"A suicide attempt is any self injurious behavior, with at least some intent (> 0) to die as a result or if intent can be inferred,
e.g. if it is clearly not an accident or the individual thinks the act could be lethal, even though denying intent."
(C-CASA definition). Posner K et al. Am J Psychiatry 164:7, July 2007.

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IS AT LEAST 1 OF THE ABOVE (EXCEPT B1) CODED YES?

IF YES, ADD THE TOTAL POINTS FOR THE ANSWERS (B1-B13)
CHECKED 'YES' AND SPECIFY THE SUICIDALITY SCORE AS INDICATED IN THE DIAGNOSTIC BOX:

MAKE ANY ADDITIONAL COMMENTS ABOUT YOUR ASSESSMENT OF THIS PATIENT'S CURENT
AND NEAR FUTURE SUICIDALITY IN THE SPACE BELOW:

NO	YES	
SUICIDALITY CURRENT		
1-8 points	Low	<input type="checkbox"/>
9-16 points	Moderate	<input type="checkbox"/>
≥ 17 points	High	<input type="checkbox"/>

C. MANIC AND HYPOMANIC EPISODES

(➡ MEANS : GO TO THE DIAGNOSTIC BOXES, CIRCLE NO IN MANIC AND HYPOMANIC DIAGNOSTIC BOXES, AND MOVE TO NEXT MODULE)

Do you have any family history of manic depressive illness or bipolar disorder, or any family member who had mood swings treated with a medication like lithium, sodium valproate (Depakote) or lamotrigine (Lamictal)? NO YES
 THIS QUESTION IS NOT A CRITERION FOR BIPOLAR DISORDER, BUT IS ASKED TO INCREASE THE CLINICIAN'S VIGILANCE ABOUT THE RISK FOR BIPOLAR DISORDER .
 IF YES, PLEASE SPECIFY WHO: _____

C1	a	Have you ever had a period of time when you were feeling 'up' or 'high' or 'hyper' or so full of energy or full of yourself that you got into trouble, - or that other people thought you were not your usual self? (Do not consider times when you were intoxicated on drugs or alcohol.)	NO	YES
IF PATIENT IS PUZZLED OR UNCLEAR ABOUT WHAT YOU MEAN BY 'UP' OR 'HIGH' OR 'HYPER', CLARIFY AS FOLLOWS: By 'up' or 'high' or 'hyper' I mean: having elated mood; increased energy; needing less sleep; having rapid thoughts; being full of ideas; having an increase in productivity, motivation, creativity, or impulsive behavior; phoning or working excessively or spending more money. IF NO, CODE NO TO C1b : IF YES ASK:				
	b	Are you currently feeling 'up' or 'high' or 'hyper' or full of energy?	NO	YES
C2	a	Have you ever been persistently irritable, for several days, so that you had arguments or verbal or physical fights, or shouted at people outside your family? Have you or others noticed that you have been more irritable or over reacted, compared to other people, even in situations that you felt were justified?	NO	YES
IF NO, CODE NO TO C2b : IF YES ASK:				
	b	Are you currently feeling persistently irritable?	NO	YES
IS C1a OR C2a CODED YES?			NO ➡	YES YES

C3 IF **C1b** OR **C2b** = YES: EXPLORE THE CURRENT AND THE MOST SYMPTOMATIC PAST EPISODE, OTHERWISE IF **C1b** AND **C2b** = NO: EXPLORE ONLY THE MOST SYMPTOMATIC PAST EPISODE

During the times when you felt high, full of energy, or irritable did you:

	Current Episode		Past Episode	
	NO	YES	NO	YES
a	Feel that you could do things others couldn't do, or that you were an especially important person? If YES, ASK FOR EXAMPLES. <small>THE EXAMPLES ARE CONSISTENT WITH A DELUSIONAL IDEA.</small>			
	Current Episode <input type="checkbox"/> No <input type="checkbox"/> Yes Past Episode <input type="checkbox"/> No <input type="checkbox"/> Yes			
b	NO	YES	NO	YES
c	NO	YES	NO	YES
d	NO	YES	NO	YES

	<u>Current Episode</u>		<u>Past Episode</u>	
e Become easily distracted so that any little interruption could distract you?	NO	YES	NO	YES
f Have a significant increase in your activity or drive, at work, at school, socially or sexually or did you become physically or mentally restless?	NO	YES	NO	YES
g Want so much to engage in pleasurable activities that you ignored the risks or consequences (for example, spending sprees, reckless driving, or sexual indiscretions)?	NO	YES	NO	YES
C3 SUMMARY: WHEN RATING CURRENT EPISODE: IF C1b IS NO, ARE 4 OR MORE C3 ANSWERS CODED YES? IF C1b IS YES, ARE 3 OR MORE C3 ANSWERS CODED YES?	NO	YES	NO	YES
WHEN RATING PAST EPISODE: IF C1a IS NO, ARE 4 OR MORE C3 ANSWERS CODED YES? IF C1a IS YES, ARE 3 OR MORE C3 ANSWERS CODED YES?				
CODE YES ONLY IF THE ABOVE 3 OR 4 SYMPTOMS OCCURRED DURING THE SAME TIME PERIOD.				
RULE: ELATION/EXPANSIVENESS REQUIRES ONLY THREE C3 SYMPTOMS, WHILE IRRITABLE MOOD ALONE REQUIRES 4 OF THE C3 SYMPTOMS.				
C4	What is the longest time these symptoms lasted?			
	a) 3 days or less	<input type="checkbox"/>		<input type="checkbox"/>
	b) 4 to 6 days	<input type="checkbox"/>		<input type="checkbox"/>
	c) 7 days or more	<input type="checkbox"/>		<input type="checkbox"/>
C5	Were you hospitalized for these problems?		NO	YES
	IF YES, STOP HERE AND CIRCLE YES IN MANIC EPISODE FOR THAT TIME FRAME.			
C6	Did these symptoms cause significant problems at home, at work, socially in your relationships with others, at school or in some other important way?		NO	YES

ARE C3 SUMMARY AND C5 AND C6 CODED YES?

OR

ARE C3 SUMMARY AND C4c AND C6 CODED YES AND IS C5 CODED NO?

SPECIFY IF THE EPISODE IS CURRENT AND / OR PAST.

NO	YES
MANIC EPISODE	
CURRENT	<input type="checkbox"/>
PAST	<input type="checkbox"/>

IS **C3** SUMMARY CODED **YES** AND ARE **C5** AND **C6** CODED **NO** AND IS EITHER **C4b** OR **C4c** CODED **YES**?

OR

ARE **C3** SUMMARY AND **C4b** AND **C6** CODED **YES** AND IS **C5** CODED **NO**?

SPECIFY IF THE EPISODE IS CURRENT AND / OR PAST.

IF **YES** TO CURRENT MANIC EPISODE, THEN CODE CURRENT HYPOMANIC EPISODE AS **NO**.

IF **YES** TO PAST MANIC EPISODE, THEN CODE PAST HYPOMANIC EPISODE AS **NOT EXPLORED**.

HYPOMANIC EPISODE

CURRENT **NO**
 YES

PAST **NO**
 YES
 NOT EXPLORED

ARE **C3** SUMMARY AND **C4a** CODED **YES** AND IS **C5** CODED **NO**?

SPECIFY IF THE EPISODE IS CURRENT AND / OR PAST.

IF **YES** TO CURRENT MANIC EPISODE OR HYPOMANIC EPISODE,
THEN CODE CURRENT HYPOMANIC SYMPTOMS AS **NO**.

IF **YES** TO PAST MANIC EPISODE OR YES TO PAST HYPOMANIC EPISODE,
THEN CODE PAST HYPOMANIC SYMPTOMS AS **NOT EXPLORED**.

HYPOMANIC SYMPTOMS

CURRENT **NO**
 YES

PAST **NO**
 YES
 NOT EXPLORED

- C7 a) IF MANIC EPISODE IS POSITIVE FOR EITHER CURRENT OR PAST ASK:
Did you have 2 or more of these (manic) episodes lasting 7 days or more (**C4c**) in your lifetime (including the current episode if present)? NO YES
- b) IF MANIC OR HYPOMANIC EPISODE IS POSITIVE FOR EITHER CURRENT OR PAST ASK:
Did you have 2 or more of these (hypomanic) episodes lasting just 4 to 6 days (**C4b**) in your lifetime (including the current episode)? NO YES
- c) IF THE PAST "HYPOMANIC SYMPTOMS" CATEGORY IS CODED POSITIVE ASK:
Did you have these hypomanic symptoms lasting only 1 to 3 days (**C4a**) 2 or more times in your lifetime, (including the current episode if present)? NO YES

D. PANIC DISORDER

(➡ MEANS : CIRCLE NO IN D5, D6 AND D7 AND SKIP TO E1)

D1	a	Have you, on more than one occasion, had spells or attacks when you suddenly felt anxious, frightened, uncomfortable or uneasy, even in situations where most people would not feel that way?	➡ NO	YES
	b	Did the spells surge to a peak within 10 minutes of starting?	➡ NO	YES
D2		At any time in the past, did any of those spells or attacks come on unexpectedly or occur in an unpredictable or unprovoked manner?	➡ NO	YES
D3		Have you ever had one such attack followed by a month or more of persistent concern about having another attack, or worries about the consequences of the attack - or did you make a significant change in your behavior because of the attacks (e.g., shopping only with a companion, not wanting to leave your house, visiting the emergency room repeatedly, or seeing your doctor more frequently because of the symptoms)?	NO	YES
D4		During the worst attack that you can remember:		
	a	Did you have skipping, racing or pounding of your heart?	NO	YES
	b	Did you have sweating or clammy hands?	NO	YES
	c	Were you trembling or shaking?	NO	YES
	d	Did you have shortness of breath or difficulty breathing?	NO	YES
	e	Did you have a choking sensation or a lump in your throat?	NO	YES
	f	Did you have chest pain, pressure or discomfort?	NO	YES
	g	Did you have nausea, stomach problems or sudden diarrhea?	NO	YES
	h	Did you feel dizzy, unsteady, lightheaded or faint?	NO	YES
	i	Did things around you feel strange, unreal, detached or unfamiliar, or did you feel outside of or detached from part or all of your body?	NO	YES
	j	Did you fear that you were losing control or going crazy?	NO	YES
	k	Did you fear that you were dying?	NO	YES
	l	Did you have tingling or numbness in parts of your body?	NO	YES
	m	Did you have hot flushes or chills?	NO	YES
D5		ARE BOTH D3 , AND 4 OR MORE D4 ANSWERS, CODED YES? IF YES TO D5, SKIP TO D7.	NO	YES <i>PANIC DISORDER LIFETIME</i>
D6		IF D5 = NO, ARE ANY D4 ANSWERS CODED YES? THEN SKIP TO E1 .	NO	YES <i>LIMITED SYMPTOM ATTACKS LIFETIME</i>
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D7 In the past month, did you have such attacks repeatedly (2 or more), and did you have persistent concern about having another attack, or worry about the consequences of the attacks, or did you change your behavior in any way because of the attacks? NO YES
PANIC DISORDER CURRENT

E. AGORAPHOBIA

E1 Do you feel anxious or uneasy in places or situations where help might not be available or escape might be difficult, like being in a crowd, standing in a line (queue), when you are alone away from home or alone at home, or when crossing a bridge, or traveling in a bus, train or car or where you might have a panic attack or the panic-like symptoms we just spoke about? NO YES

IF E1 = NO, CIRCLE NO IN E2.

E2 Do you fear these situations so much that you avoid them, or suffer through them, or need a companion to face them? NO YES
AGORAPHOBIA CURRENT

IS E2 (CURRENT AGORAPHOBIA) CODED YES
 and
 IS D7 (CURRENT PANIC DISORDER) CODED YES?

NO YES
***PANIC DISORDER
 with Agoraphobia
 CURRENT***

IS E2 (CURRENT AGORAPHOBIA) CODED NO
 and
 IS D7 (CURRENT PANIC DISORDER) CODED YES?

NO YES
***PANIC DISORDER
 without Agoraphobia
 CURRENT***

IS E2 (CURRENT AGORAPHOBIA) CODED YES
 and
 IS D5 (PANIC DISORDER LIFETIME) CODED NO?

NO YES
***AGORAPHOBIA, CURRENT
 without history of
 Panic Disorder***

F. SOCIAL PHOBIA (Social Anxiety Disorder)

(➔ MEANS : GO TO THE DIAGNOSTIC BOX, CIRCLE NO AND MOVE TO THE NEXT MODULE)

F1	In the past month, did you have persistent fear and significant anxiety at being watched, being the focus of attention, or of being humiliated or embarrassed? This includes things like speaking in public, eating in public or with others, writing while someone watches, or being in social situations.	➔ NO	YES
----	---	---------	-----

F2	Is this social fear excessive or unreasonable and does it almost always make you anxious?	➔ NO	YES
----	---	---------	-----

F3	Do you fear these social situations so much that you avoid them or suffer through them most of the time?	➔ NO	YES
----	--	---------	-----

F4	Do these social fears disrupt your normal work, school or social functioning or cause you significant distress?		
----	---	--	--

SUBTYPES

Do you fear and avoid 4 or more social situations?

If YES Generalized social phobia (social anxiety disorder)

If NO Non-generalized social phobia (social anxiety disorder)

EXAMPLES OF SUCH SOCIAL SITUATIONS TYPICALLY INCLUDE

- INITIATING OR MAINTAINING A CONVERSATION,
- PARTICIPATING IN SMALL GROUPS,
- DATING,
- SPEAKING TO AUTHORITY FIGURES,
- ATTENDING PARTIES,
- PUBLIC SPEAKING,
- EATING IN FRONT OF OTHERS,
- URINATING IN A PUBLIC WASHROOM, ETC.

NOTE TO INTERVIEWER: PLEASE ASSESS WHETHER THE SUBJECT'S FEARS ARE RESTRICTED TO NON-GENERALIZED ("ONLY 1 OR SEVERAL") SOCIAL SITUATIONS OR EXTEND TO GENERALIZED ("MOST") SOCIAL SITUATIONS. "MOST" SOCIAL SITUATIONS IS USUALLY OPERATIONALIZED TO MEAN 4 OR MORE SOCIAL SITUATIONS, ALTHOUGH THE DSM-IV DOES NOT EXPLICITLY STATE THIS.

NO	YES
SOCIAL PHOBIA <i>(Social Anxiety Disorder)</i>	
CURRENT	
GENERALIZED	<input type="checkbox"/>
NON-GENERALIZED	<input type="checkbox"/>

G. OBSESSIVE-COMPULSIVE DISORDER

(➡ MEANS: GO TO THE DIAGNOSTIC BOX, CIRCLE NO AND MOVE TO THE NEXT MODULE)

G1	In the past month, have you been bothered by recurrent thoughts, impulses, or images that were unwanted, distasteful, inappropriate, intrusive, or distressing? - (For example, the idea that you were dirty, contaminated or had germs, or fear of contaminating others, or fear of harming someone even though it disturbs or distresses you, or fear you would act on some impulse, or fear or superstitions that you would be responsible for things going wrong, or obsessions with sexual thoughts, images or impulses, or hoarding, collecting, or religious obsessions.) (DO NOT INCLUDE SIMPLY EXCESSIVE WORRIES ABOUT REAL LIFE PROBLEMS. DO NOT INCLUDE OBSESSIONS DIRECTLY RELATED TO EATING DISORDERS, SEXUAL DEVIATIONS, PATHOLOGICAL GAMBLING, OR ALCOHOL OR DRUG ABUSE BECAUSE THE PATIENT MAY DERIVE PLEASURE FROM THE ACTIVITY AND MAY WANT TO RESIST IT ONLY BECAUSE OF ITS NEGATIVE CONSEQUENCES.)	NO YES ↓ SKIP TO G4				
G2	Did they keep coming back into your mind even when you tried to ignore or get rid of them?	NO YES ↓ SKIP TO G4				
G3	Do you think that these obsessions are the product of your own mind and that they are not imposed from the outside?	NO YES <input type="checkbox"/> obsessions				
G4	In the past month, did you do something repeatedly without being able to resist doing it, like washing or cleaning excessively, counting or checking things over and over, or repeating, collecting, arranging things, or other superstitious rituals?	NO YES <input type="checkbox"/> compulsions				
	➡					
	IS G3 OR G4 CODED YES?	NO YES ➡				
G5	At any point, did you recognize that either these obsessive thoughts or these compulsive behaviors were excessive or unreasonable?	NO YES ➡				
G6	In the past month, did these obsessive thoughts and/or compulsive behaviors significantly interfere with your normal routine, your work or school, your usual social activities, or relationships, or did they take more than one hour a day?	<table border="1" style="margin: auto; padding: 10px;"> <tr> <td style="width: 50px;">NO</td> <td style="width: 50px;">YES</td> </tr> <tr> <td colspan="2" style="text-align: center;">O.C.D. CURRENT</td> </tr> </table>	NO	YES	O.C.D. CURRENT	
NO	YES					
O.C.D. CURRENT						

H. POSTTRAUMATIC STRESS DISORDER

(➡ MEANS : GO TO THE DIAGNOSTIC BOX, CIRCLE NO, AND MOVE TO THE NEXT MODULE)

H1	Have you ever experienced or witnessed or had to deal with an extremely traumatic event that included actual or threatened death or serious injury to you or someone else?	➡ NO	YES
<small>EXAMPLES OF TRAUMATIC EVENTS INCLUDE: SERIOUS ACCIDENTS, SEXUAL OR PHYSICAL ASSAULT, A TERRORIST ATTACK, BEING HELD HOSTAGE, KIDNAPPING, FIRE, DISCOVERING A BODY, WAR, OR NATURAL DISASTER, WITNESSING THE VIOLENT OR SUDDEN DEATH OF SOMEONE CLOSE TO YOU, OR A LIFE THREATENING ILLNESS.</small>			
H2	Did you respond with intense fear, helplessness or horror?	➡ NO	YES
H3	During the past month, have you re-experienced the event in a distressing way (such as in dreams, intense recollections, flashbacks or physical reactions) or did you have intense distress when you were reminded about the event or exposed to a similar event?	➡ NO	YES

H4	In the past month:		
	a Have you avoided thinking about or talking about the event ?	NO	YES
	b Have you avoided activities, places or people that remind you of the event?	NO	YES
	c Have you had trouble recalling some important part of what happened?	NO	YES
	d Have you become much less interested in hobbies or social activities?	NO	YES
	e Have you felt detached or estranged from others?	NO	YES
	f Have you noticed that your feelings are numbed?	NO	YES
	g Have you felt that your life will be shortened or that you will die sooner than other people?	NO	YES
	ARE 3 OR MORE H4 ANSWERS CODED YES?	➡ NO	YES

H5	In the past month:		
	a Have you had difficulty sleeping?	NO	YES
	b Were you especially irritable or did you have outbursts of anger?	NO	YES
	c Have you had difficulty concentrating?	NO	YES
	d Were you nervous or constantly on your guard?	NO	YES
	e Were you easily startled?	NO	YES
	ARE 2 OR MORE H5 ANSWERS CODED YES?	➡ NO	YES

H6	During the past month, have these problems significantly interfered with your work, school or social activities, or caused significant distress?		
----	--	--	--

NO YES

**POSTTRAUMATIC
STRESS DISORDER
CURRENT**

I. ALCOHOL DEPENDENCE / ABUSE

(➡ MEANS: GO TO DIAGNOSTIC BOXES, CIRCLE NO IN BOTH AND MOVE TO THE NEXT MODULE)

I1	In the past 12 months, have you had 3 or more alcoholic drinks, - within a 3 hour period, - on 3 or more occasions?	➡ NO	YES
----	---	---------	-----

I2	In the past 12 months:		
	a Did you need to drink a lot more in order to get the same effect that you got when you first started drinking or did you get much less effect with continued use of the same amount?	NO	YES
	b When you cut down on drinking did your hands shake, did you sweat or feel agitated? Did you drink to avoid these symptoms (for example, "the shakes", sweating or agitation) or to avoid being hungover? <small>IF YES TO ANY, CODE YES.</small>	NO	YES
	c During the times when you drank alcohol, did you end up drinking more than you planned when you started?	NO	YES
	d Have you tried to reduce or stop drinking alcohol but failed?	NO	YES
	e On the days that you drank, did you spend substantial time obtaining alcohol, drinking, or recovering from the effects of alcohol?	NO	YES
	f Did you spend less time working, enjoying hobbies, or being with others because of your drinking?	NO	YES
	g If your drinking caused you health or mental problems, did you still keep on drinking?	NO	YES

ARE 3 OR MORE I2 ANSWERS CODED YES?

* IF YES, SKIP I3 QUESTIONS AND GO TO NEXT MODULE. "DEPENDENCE PREEMPTS ABUSE" IN DSM IV TR.

NO	YES*
ALCOHOL DEPENDENCE CURRENT	

I3	In the past 12 months:		
	a Have you been intoxicated, high, or hungover more than once when you had other responsibilities at school, at work, or at home? Did this cause any problems? <small>(CODE YES ONLY IF THIS CAUSED PROBLEMS.)</small>	NO	YES
	b Were you intoxicated more than once in any situation where you were physically at risk, for example, driving a car, riding a motorbike, using machinery, boating, etc.?	NO	YES
	c Did you have legal problems more than once because of your drinking, for example, an arrest or disorderly conduct?	NO	YES
	d If your drinking caused problems with your family or other people, did you still keep on drinking?	NO	YES

ARE 1 OR MORE I3 ANSWERS CODED YES?

NO	YES
<i>ALCOHOL ABUSE</i>	
CURRENT	

J. SUBSTANCE DEPENDENCE / ABUSE (NON-ALCOHOL)

(➔ MEANS : GO TO THE DIAGNOSTIC BOXES, CIRCLE NO IN ALL DIAGNOSTIC BOXES, AND MOVE TO THE NEXT MODULE)

Now I am going to show you / read to you a list of street drugs or medicines.			
J1	a In the past 12 months, did you take any of these drugs more than once, to get high, to feel elated, to get "a buzz" or to change your mood?	➔	NO YES

CIRCLE EACH DRUG TAKEN:

Stimulants: amphetamines, "speed", crystal meth, "crank", "rush", Dexedrine, Ritalin, diet pills.

Cocaine: snorting, IV, freebase, crack, "speedball".

Narcotics: heroin, morphine, Dilaudid, opium, Demerol, methadone, Darvon, codeine, Percodan, Vicodin, OxyContin.

Hallucinogens: LSD ("acid"), mescaline, peyote, psilocybin, STP, "mushrooms", "ecstasy", MDA, MDMA.

Phencyclidine: PCP ("Angel Dust", "Peace Pill", "Tranq", "Hog"), or ketamine ("Special K").

Inhalants: "glue", ethyl chloride, "rush", nitrous oxide ("laughing gas"), amyl or butyl nitrate ("poppers").

Cannabis: marijuana, hashish ("hash"), THC, "pot", "grass", "weed", "reefer".

Tranquilizers: Quaalude, Seconal ("reds"), Valium, Xanax, Librium, Ativan, Dalmane, Halcion, barbiturates, Miltown, GHB, Roofinol, "Roofies".

Miscellaneous: steroids, nonprescription sleep or diet pills. Cough Medicine? Any others?

SPECIFY THE MOST USED DRUG(S): _____

WHICH DRUG(S) CAUSE THE BIGGEST PROBLEMS?: _____

FIRST EXPLORE THE DRUG CAUSING THE BIGGEST PROBLEMS AND MOST LIKELY TO MEET DEPENDENCE / ABUSE CRITERIA.

IF MEETS CRITERIA FOR ABUSE OR DEPENDENCE, SKIP TO THE NEXT MODULE. OTHERWISE, EXPLORE THE NEXT MOST PROBLEMATIC DRUG.

J2	Considering your use of (NAME THE DRUG / DRUG CLASS SELECTED), in the past 12 months:		
	a Have you found that you needed to use much more (NAME OF DRUG / DRUG CLASS SELECTED) to get the same effect that you did when you first started taking it?	NO	YES
	b When you reduced or stopped using (NAME OF DRUG / DRUG CLASS SELECTED), did you have withdrawal symptoms (aches, shaking, fever, weakness, diarrhea, nausea, sweating, heart pounding, difficulty sleeping, or feeling agitated, anxious, irritable, or depressed)? Did you use any drug(s) to keep yourself from getting sick (withdrawal symptoms) or so that you would feel better?	NO	YES
	IF YES TO EITHER, CODE YES.		
	c Have you often found that when you used (NAME OF DRUG / DRUG CLASS SELECTED), you ended up taking more than you thought you would?	NO	YES
	d Have you tried to reduce or stop taking (NAME OF DRUG / DRUG CLASS SELECTED) but failed?	NO	YES
	e On the days that you used (NAME OF DRUG / DRUG CLASS SELECTED), did you spend substantial time (>2 HOURS), obtaining, using or recovering from the drug, or thinking about the drug?	NO	YES
	f Did you spend less time working, enjoying hobbies, or being with family or friends because of your drug use?	NO	YES
	g If (NAME OF DRUG / DRUG CLASS SELECTED) caused you health or mental problems, did you still keep on using it?	NO	YES

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ARE 3 OR MORE J2 ANSWERS CODED YES?

SPECIFY DRUG(S): _____

* IF YES, SKIP J3 QUESTIONS, MOVE TO NEXT DISORDER.
"DEPENDENCE PREEMPTS ABUSE" IN DSM IV TR.

NO	YES *
SUBSTANCE DEPENDENCE CURRENT	

Considering your use of (NAME THE DRUG CLASS SELECTED), in the past 12 months:

- | | | |
|----|---|---|
| J3 | <p>a Have you been intoxicated, high, or hungover from (NAME OF DRUG / DRUG CLASS SELECTED) more than once, when you had other responsibilities at school, at work, or at home? Did this cause any problem?</p> <p>(CODE YES ONLY IF THIS CAUSED PROBLEMS.)</p> <p>b Have you been high or intoxicated from (NAME OF DRUG / DRUG CLASS SELECTED) more than once in any situation where you were physically at risk (for example, driving a car, riding a motorbike, using machinery, boating, etc.)?</p> <p>c Did you have legal problems more than once because of your drug use, for example, an arrest or disorderly conduct?</p> <p>d If (NAME OF DRUG / DRUG CLASS SELECTED) caused problems with your family or other people, did you still keep on using it?</p> | <p>NO YES</p> <p>NO YES</p> <p>NO YES</p> <p>NO YES</p> |
|----|---|---|

ARE 1 OR MORE J3 ANSWERS CODED YES?

SPECIFY DRUG(S): _____

NO	YES
SUBSTANCE ABUSE CURRENT	

K. PSYCHOTIC DISORDERS AND MOOD DISORDER WITH PSYCHOTIC FEATURES

ASK FOR AN EXAMPLE OF EACH QUESTION ANSWERED POSITIVELY. CODE YES ONLY IF THE EXAMPLES CLEARLY SHOW A DISTORTION OF THOUGHT OR OF PERCEPTION OR IF THEY ARE NOT CULTURALLY APPROPRIATE. BEFORE CODING, INVESTIGATE WHETHER DELUSIONS QUALIFY AS "BIZARRE".

DELUSIONS ARE "BIZARRE" IF: CLEARLY IMPLAUSIBLE, ABSURD, NOT UNDERSTANDABLE, AND CANNOT DERIVE FROM ORDINARY LIFE EXPERIENCE.

HALLUCINATIONS ARE SCORED "BIZARRE" IF: A VOICE COMMENTS ON THE PERSON'S THOUGHTS OR BEHAVIOR, OR WHEN TWO OR MORE VOICES ARE CONVERSING WITH EACH OTHER. THE PURPOSE OF THIS MODULE IS TO EXCLUDE PATIENTS WITH PSYCHOTIC DISORDERS. THIS MODULE NEEDS EXPERIENCE.

			BIZARRE
Now I am going to ask you about unusual experiences that some people have.			
K1	a	Have you ever believed that people were spying on you, or that someone was plotting against you, or trying to hurt you? <small>NOTE: ASK FOR EXAMPLES TO RULE OUT ACTUAL STALKING.</small>	NO YES YES
	b	IF YES OR YES BIZARRE: do you currently believe these things?	NO YES YES ↳K6
K2	a	Have you ever believed that someone was reading your mind or could hear your thoughts, or that you could actually read someone's mind or hear what another person was thinking?	NO YES YES
	b	IF YES OR YES BIZARRE: do you currently believe these things?	NO YES YES ↳K6
K3	a	Have you ever believed that someone or some force outside of yourself put thoughts in your mind that were not your own, or made you act in a way that was not your usual self? Have you ever felt that you were possessed? <small>CLINICIAN: ASK FOR EXAMPLES AND DISCOUNT ANY THAT ARE NOT PSYCHOTIC.</small>	NO YES YES
	b	IF YES OR YES BIZARRE: do you currently believe these things?	NO YES YES ↳K6
K4	a	Have you ever believed that you were being sent special messages through the TV, radio, internet, newspapers, books, or magazines or that a person you did not personally know was particularly interested in you?	NO YES YES
	b	IF YES OR YES BIZARRE: do you currently believe these things?	NO YES YES ↳K6
K5	a	Have your relatives or friends ever considered any of your beliefs odd or unusual? <small>INTERVIEWER: ASK FOR EXAMPLES. ONLY CODE YES IF THE EXAMPLES ARE CLEARLY DELUSIONAL IDEAS NOT EXPLORED IN QUESTIONS K1 TO K4, FOR EXAMPLE, SOMATIC OR RELIGIOUS DELUSIONS OR DELUSIONS OF GRANDIOSITY, JEALOUSY, GUILT, RUIN OR DESTITUTION, ETC.</small>	NO YES YES
	b	IF YES OR YES BIZARRE: do they currently consider your beliefs strange?	NO YES YES
K6	a	Have you ever heard things other people couldn't hear, such as voices?	NO YES
		IF YES TO VOICE HALLUCINATION: Was the voice commenting on your thoughts or behavior or did you hear two or more voices talking to each other?	NO YES
	b	IF YES OR YES BIZARRE TO K6a: have you heard sounds / voices in the past month?	NO YES
		IF YES TO VOICE HALLUCINATION: Was the voice commenting on your thoughts or behavior or did you hear two or more voices talking to each other?	NO YES ↳K8b
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K7 a Have you ever had visions when you were awake or have you ever seen things other people couldn't see? NO YES

CLINICIAN: CHECK TO SEE IF THESE ARE CULTURALLY INAPPROPRIATE.

b IF YES: have you seen these things in the past month? NO YES

CLINICIAN'S JUDGMENT

K8 b IS THE PATIENT CURRENTLY EXHIBITING INCOHERENCE, DISORGANIZED SPEECH, OR MARKED LOOSENING OF ASSOCIATIONS? NO YES

K9 b IS THE PATIENT CURRENTLY EXHIBITING DISORGANIZED OR CATATONIC BEHAVIOR? NO YES

K10 b ARE NEGATIVE SYMPTOMS OF SCHIZOPHRENIA, E.G. SIGNIFICANT AFFECTIVE FLATTENING, POVERTY OF SPEECH (ALOGIA) OR AN INABILITY TO INITIATE OR PERSIST IN GOAL-DIRECTED ACTIVITIES (AVOLITION), PROMINENT DURING THE INTERVIEW? NO YES

K11 a ARE 1 OR MORE « a » QUESTIONS FROM K1a TO K7a CODED YES OR YES BIZARRE AND IS EITHER:

MAJOR DEPRESSIVE EPISODE, (CURRENT, RECURRENT OR PAST)
OR
MANIC OR HYPOMANIC EPISODE, (CURRENT OR PAST) CODED YES?

NO YES
↳ K13

IF NO TO K11 a, CIRCLE NO IN BOTH 'MOOD DISORDER WITH PSYCHOTIC FEATURES' DIAGNOSTIC BOXES AND MOVE TO K13.

b You told me earlier that you had period(s) when you felt (depressed/high/persistently irritable).

Were the beliefs and experiences you just described (SYMPTOMS CODED YES FROM K1a TO K7a) restricted exclusively to times when you were feeling depressed/high/irritable?

IF THE PATIENT EVER HAD A PERIOD OF AT LEAST 2 WEEKS OF HAVING THESE BELIEFS OR EXPERIENCES (PSYCHOTIC SYMPTOMS) WHEN THEY WERE NOT DEPRESSED/HIGH/IRRITABLE, CODE NO TO THIS DISORDER.

IF THE ANSWER IS NO TO THIS DISORDER, ALSO CIRCLE NO TO K12 AND MOVE TO K13

NO	YES
MOOD DISORDER WITH PSYCHOTIC FEATURES	
LIFETIME	

K12 a ARE 1 OR MORE « b » QUESTIONS FROM K1b TO K7b CODED YES OR YES BIZARRE AND IS EITHER:

MAJOR DEPRESSIVE EPISODE, (CURRENT)
OR
MANIC OR HYPOMANIC EPISODE, (CURRENT) CODED YES?

NO YES

MOOD DISORDER WITH PSYCHOTIC FEATURES

CURRENT

IF THE ANSWER IS YES TO THIS DISORDER (LIFETIME OR CURRENT), CIRCLE NO TO K13 AND K14 AND MOVE TO THE NEXT MODULE.

K13 ARE 1 OR MORE « b » QUESTIONS FROM K1b TO K6b, CODED YES BIZARRE?
OR
ARE 2 OR MORE « b » QUESTIONS FROM K1b TO K10b, CODED YES (RATHER THAN YES BIZARRE)?
AND DID AT LEAST TWO OF THE PSYCHOTIC SYMPTOMS OCCUR DURING THE SAME 1 MONTH PERIOD?

NO	YES
PSYCHOTIC DISORDER CURRENT	

K14 IS K13 CODED YES
OR
ARE 1 OR MORE « a » QUESTIONS FROM K1a TO K6a, CODED YES BIZARRE?
OR
ARE 2 OR MORE « a » QUESTIONS FROM K1a TO K7a, CODED YES (RATHER THAN YES BIZARRE)
AND DID AT LEAST TWO OF THE PSYCHOTIC SYMPTOMS OCCUR DURING THE SAME 1 MONTH PERIOD?

NO	YES
PSYCHOTIC DISORDER LIFETIME	

L. ANOREXIA NERVOSA

(➡ MEANS : GO TO THE DIAGNOSTIC BOX, CIRCLE NO, AND MOVE TO THE NEXT MODULE)

L1	a How tall are you? <div style="display: flex; justify-content: flex-end; gap: 10px; margin-top: 5px;"> <input type="text"/> ft <input type="text"/> in. <input type="text"/> <input type="text"/> cm </div> b. What was your lowest weight in the past 3 months? <div style="display: flex; justify-content: flex-end; gap: 10px; margin-top: 5px;"> <input type="text"/> lb <input type="text"/> kg </div>	
	c IS PATIENT'S WEIGHT EQUAL TO OR BELOW THE THRESHOLD CORRESPONDING TO HIS / HER HEIGHT? (SEE TABLE BELOW)	➡ NO YES

In the past 3 months:

L2	In spite of this low weight, have you tried not to gain weight?	➡ NO YES
L3	Have you intensely feared gaining weight or becoming fat, even though you were underweight?	➡ NO YES
L4	a Have you considered yourself too big / fat or that part of your body was too big / fat? b Has your body weight or shape greatly influenced how you felt about yourself? c Have you thought that your current low body weight was normal or excessive?	NO YES NO YES NO YES
L5	ARE 1 OR MORE ITEMS FROM L4 CODED YES?	➡ NO YES
L6	FOR WOMEN ONLY: During the last 3 months, did you miss all your menstrual periods when they were expected to occur (when you were not pregnant)?	➡ NO YES

FOR WOMEN: ARE L5 AND L6 CODED YES?

FOR MEN: IS L5 CODED YES?

NO YES

ANOREXIA NERVOSA

CURRENT

HEIGHT / WEIGHT TABLE CORRESPONDING TO A BMI THRESHOLD OF 17.5 kg/m²

Height/Weight	4'9	4'10	4'11	5'0	5'1	5'2	5'3	5'4	5'5	5'6	5'7	5'8	5'9	5'10
ft/in	4'9	4'10	4'11	5'0	5'1	5'2	5'3	5'4	5'5	5'6	5'7	5'8	5'9	5'10
lb	81	84	87	89	92	96	99	102	105	108	112	115	118	122
cm	145	147	150	152	155	158	160	163	165	168	170	173	175	178
kg	37	38	39	41	42	43	45	46	48	49	51	52	54	55

Height/Weight	5'11	6'0	6'1	6'2	6'3
ft/in	5'11	6'0	6'1	6'2	6'3
lb	125	129	132	136	140
cm	180	183	185	188	191
kg	57	59	60	62	64

The weight thresholds above are calculated using a body mass index (BMI) equal to or below 17.5 kg/m² for the patient's height. This is the threshold guideline below which a person is deemed underweight by the DSM-IV and the ICD-10 Diagnostic Criteria for Research for Anorexia Nervosa.

M. BULIMIA NERVOSA

(➔ MEANS : GO TO THE DIAGNOSTIC BOXES, CIRCLE NO IN ALL DIAGNOSTIC BOXES, AND MOVE TO THE NEXT MODULE)

M1	In the past three months, did you have eating binges or times when you ate a very large amount of food within a 2-hour period?	➔	NO	YES
M2	In the last 3 months, did you have eating binges as often as twice a week?	➔	NO	YES
M3	During these binges, did you feel that your eating was out of control?	➔	NO	YES
M4	Did you do anything to compensate for, or to prevent a weight gain from these binges, like vomiting, fasting, exercising or taking laxatives, enemas, diuretics (fluid pills), or other medications?	➔	NO	YES
M5	Does your body weight or shape greatly influence how you feel about yourself?	➔	NO	YES
M6	DO THE PATIENT'S SYMPTOMS MEET CRITERIA FOR ANOREXIA NERVOSA?	➔	NO	YES
		↓	Skip to M8	
M7	Do these binges occur only when you are under (____lb/kg)? <small>INTERVIEWER: WRITE IN THE ABOVE PARENTHESIS THE THRESHOLD WEIGHT FOR THIS PATIENT'S HEIGHT FROM THE HEIGHT / WEIGHT TABLE IN THE ANOREXIA NERVOSA MODULE.</small>	➔	NO	YES

M8 IS M5 CODED YES AND IS EITHER M6 OR M7 CODED NO?

NO	YES
BULIMIA NERVOSA	
CURRENT	

IS M7 CODED YES?

NO	YES
ANOREXIA NERVOSA	
<i>Binge Eating/Purging Type</i>	
CURRENT	

N. GENERALIZED ANXIETY DISORDER

(➔ MEANS : GO TO THE DIAGNOSTIC BOX, CIRCLE NO, AND MOVE TO THE NEXT MODULE)

N1	a	Were you excessively anxious or worried about several routine things, over the past 6 months? IN ENGLISH, IF THE PATIENT IS UNCLEAR ABOUT WHAT YOU MEAN, PROBE BY ASKING (Do others think that you are a “worry wart”?) AND GET EXAMPLES.	➔ NO	YES
	b	Are these anxieties and worries present most days?	➔ NO	YES
		ARE THE PATIENT’S ANXIETY AND WORRIES RESTRICTED EXCLUSIVELY TO, OR BETTER EXPLAINED BY, ANY DISORDER PRIOR TO THIS POINT?	NO	➔ YES
N2		Do you find it difficult to control the worries?	➔ NO	YES
N3		FOR THE FOLLOWING, CODE NO IF THE SYMPTOMS ARE CONFINED TO FEATURES OF ANY DISORDER EXPLORED PRIOR TO THIS POINT. When you were anxious over the past 6 months, did you, most of the time:		
	a	Feel restless, keyed up or on edge?	NO	YES
	b	Have muscle tension?	NO	YES
	c	Feel tired, weak or exhausted easily?	NO	YES
	d	Have difficulty concentrating or find your mind going blank?	NO	YES
	e	Feel irritable?	NO	YES
	f	Have difficulty sleeping (difficulty falling asleep, waking up in the middle of the night, early morning waking or sleeping excessively)?	NO	YES
		ARE 3 OR MORE N3 ANSWERS CODED YES?	➔ NO	YES
N4		Do these anxieties and worries disrupt your normal work, school or social functioning or cause you significant distress?		

NO **YES**

**GENERALIZED ANXIETY
DISORDER
CURRENT**

O. RULE OUT MEDICAL, ORGANIC OR DRUG CAUSES FOR ALL DISORDERS

IF THE PATIENT CODES POSITIVE FOR ANY CURRENT DISORDER ASK:

Just before these symptoms began:

- O1a Were you taking any drugs or medicines? No Yes Uncertain
- O1b Did you have any medical illness? No Yes Uncertain

IN THE CLINICIAN’S JUDGMENT: ARE EITHER OF THESE LIKELY TO BE DIRECT CAUSES OF THE PATIENT’S DISORDER?
IF NECESSARY ASK ADDITIONAL OPEN-ENDED QUESTIONS.

- O2 **SUMMARY:** HAS AN ORGANIC CAUSE BEEN RULED OUT? No Yes Uncertain

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P. ANTISOCIAL PERSONALITY DISORDER

(➡ MEANS : GO TO THE DIAGNOSTIC BOX AND CIRCLE NO)

- P1 Before you were 15 years old, did you:**
- | | | |
|---|----|--------|
| a repeatedly skip school or run away from home overnight? | NO | YES |
| b repeatedly lie, cheat, "con" others, or steal? | NO | YES |
| c start fights or bully, threaten, or intimidate others? | NO | YES |
| d deliberately destroy things or start fires? | NO | YES |
| e deliberately hurt animals or people? | NO | YES |
| f force someone to have sex with you? | NO | YES |
| ARE 2 OR MORE P1 ANSWERS CODED YES? | ➡ | NO YES |

DO NOT CODE YES TO THE BEHAVIORS BELOW IF THEY ARE EXCLUSIVELY POLITICALLY OR RELIGIOUSLY MOTIVATED.

- P2 Since you were 15 years old, have you:**
- | | | |
|--|----|-----|
| a repeatedly behaved in a way that others would consider irresponsible, like failing to pay for things you owed, deliberately being impulsive or deliberately not working to support yourself? | NO | YES |
| b done things that are illegal even if you didn't get caught (for example, destroying property, shoplifting, stealing, selling drugs, or committing a felony)? | NO | YES |
| c been in physical fights repeatedly (including physical fights with your spouse or children)? | NO | YES |
| d often lied or "conned" other people to get money or pleasure, or lied just for fun? | NO | YES |
| e exposed others to danger without caring? | NO | YES |
| f felt no guilt after hurting, mistreating, lying to, or stealing from others, or after damaging property? | NO | YES |

ARE 3 OR MORE P2 QUESTIONS CODED YES?

NO	YES
ANTISOCIAL PERSONALITY DISORDER LIFETIME	

THIS CONCLUDES THE INTERVIEW

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Scientific committee for the MINI 6.0.0:

A. Carlo Altamura, Milano, Italy
 Cyril Hoschl, Praha, Czech Republic
 George Papadimitriou, Athens, Greece
 Hans Ågren, Göteborg, Sweden
 Hans-Jürgen Möller, München, Germany
 Hans-Ulrich Wittchen, Dresden, Germany
 István Bitter, Budapest, Hungary
 Jean-Pierre Lépine, Paris, France
 Jules Angst, Zurich, Switzerland
 Julio Bobes, Oviedo, Spain
 Luciano Conti, Pisa, Italy
 Marelli Colon-Soto MD, Puerto Rico, United States
 Michael Van Ameringen MD, Toronto, Canada
 Rosario Hidalgo MD, Tampa, United States
 Siegfried Kasper, Vienna, Austria
 Thomas Schlaepfer, Bonn, Germany

Translations

	<u>M.I.N.I. 4.4 or earlier versions</u>
Afrikaans	R. Emsley, W. Maartens
Arabic	
Bengali	
Braille (English)	
Brazilian Portuguese	P. Amorim
Bulgarian	L.G. Hranov
Chinese	
Czech	
Danish	P. Bech
Dutch/Flemish	E. Griez, K. Shruers, T. Overbeek, K. Demyttenaere
English	D. Sheehan, J. Janavs, R. Baker, K. Harnett-Sheehan, E. Knapp, M. Sheehan
Estonian	
Farsi/Persian	
Finnish	M. Heikkinen, M. Lijeström, O. Tuominen
French	Y. Lecrubier, E. Weiller, I. Bonora, P. Amorim, J.P. Lepine
German	I. v. Denffer, M. Ackenheil, R. Dietz-Bauer
Greek	S. Beratis
Gujarati	
Hebrew	J. Zohar, Y. Sasson
Hindi	
Hungarian	I. Bitter, J. Balazs
Icelandic	
Italian	I. Bonora, L. Conti, M. Piccinelli, M. Tansella, G. Cassano, Y. Lecrubier, P. Donda, E. Weiller
Japanese	

M.I.N.I. 4.6/5.0, M.I.N.I. Plus 4.6/5.0 and M.I.N.I. Screen 5.0:

O. Osman, E. Al-Radi
 H. Banerjee, A. Banerjee
 P. Amorim
 L. Carroll, Y-J. Lee, Y-S. Chen, C-C. Chen, C-Y. Liu, C-K. Wu, H-S. Tang, K-D. Juang, Yan-Ping Zheng.
 P. Svlosky
 P. Bech, T. Schütze
 I. Van Vliet, H. Leroy, H. van Megen
 D. Sheehan, R. Baker, J. Janavs, K. Harnett-Sheehan, M. Sheehan
 J. Shlik, A. Aluoja, E. Khil
 K. Khooshabi, A. Zomorodi
 M. Heikkinen, M. Lijeström, O. Tuominen
 Y. Lecrubier, E. Weiller, P. Amorim, T. Hergueta
 G. Stotz, R. Dietz-Bauer, M. Ackenheil
 T. Calligas, S. Beratis, GN Papidimitriou, T Matsoukas
 CR Soldatos
 M. Patel, B. Patel, Organon
 R. Barda, I. Levinson, A. Aviv
 C. Mittal, K. Batra, S. Gambhir, Organon
 I. Bitter, J. Balazs
 J.G. Stefansson
 L. Conti, A. Rossi, P. Donda
 T. Otsubo, H. Watanabe, H. Miyaoka, K. Kamijima, J. Shinoda, K. Tanaka, Y. Okajima

M.I.N.I. 6.0.0 (January 1, 2010)

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Kannada		Organon
Korean		K.S. Oh and Korean Academy of Anxiety Disorders
Latvian	V. Janavs, J. Janavs, I. Nagobads	V. Janavs, J. Janavs
Lithuanian		A. Bacevicius
Luganda		WW. Muhweziosal, H. Agren
Malayalam		Organon
Marathi		Organon
Norwegian	G. Pedersen, S. Blomhoff	K.A. Leiknes, U. Malt, E. Malt, S. Leganger
Polish	M. Masiak, E. Jasiak	M. Masiak, E. Jasiak
Portuguese	P. Amorim	P. Amorim, T. Guterres
Punjabi		A. Gahunia, S. Gambhir
Romanian		O. Driga
Russian		A. Bystritsky, E. Selivra, M. Bystritsky, L. Shumyak, M. Klisinska.
Serbian	I. Timotijevic	I. Timotijevic
Setswana	K. Ketlogetswe	
Slovenian	M. Kocmur	
Spanish	L. Ferrando, J. Bobes-Garcia, J. Gilbert-Rahola, Y. Lecrubier	L. Ferrando, L. Franco-Alfonso, M. Soto, J. Bobes-Garcia, O. Soto, L. Franco, G. Heinze, C. Santana, R. Hidalgo
Swedish	M. Waern, S. Andersch, M. Humble	C. Allgulander, H. Agren M. Waern, A. Brimse, M. Humble.
Tamil		Organon
Telugu		Organon
Thai		P. Kittirattanapaiboon, S. Mahatnirunkul, P. Udomrat, P. Silpakit., M. Khamwongpin, S. Srikosai.
Turkish	T. Örnek, A. Keskiner, I. Vahip	T. Örnek, A. Keskiner, A.Engeler
Urdu		S. Gambhir
Yiddish		J. Goldman, Chana Pollack, Myrna Mniewski

A validation study of this instrument was made possible, in part, by grants from SmithKline Beecham and the European Commission. The authors are grateful to Dr. Pauline Powers for her advice on the modules on Anorexia Nervosa and Bulimia.

MOOD DISORDERS: DIAGNOSTIC ALGORITHM

Consult Modules: A Major Depressive Episode
 C (Hypo)manic Episode
 K Psychotic Disorders

MODULE K:

1a	IS K11b CODED YES?	NO	YES
1b	IS K12a CODED YES?	NO	YES

MODULES A and C:

		Current	Past
2 a	CIRCLE YES IF A DELUSIONAL IDEA IS IDENTIFIED IN A3e	YES	YES
b	CIRCLE YES IF A DELUSIONAL IDEA IS IDENTIFIED IN C3a	YES	YES

c Is a Major Depressive Episode coded YES (current or past)?
 and
 is Manic Episode coded NO (current and past)?
 and
 is Hypomanic Episode coded NO (current and past)?
 and
 is "Hypomanic Symptoms" coded NO (current and past)?

Specify:

- If the depressive episode is **current** or **past** or both
- **With Psychotic Features** Current: If 1b or 2a (current) = YES
 With Psychotic Features Past: If 1a or 2a (past) = YES

MAJOR DEPRESSIVE DISORDER

		current	past
MDD		<input type="checkbox"/>	<input type="checkbox"/>
	With Psychotic Features		
Current		<input type="checkbox"/>	
Past		<input type="checkbox"/>	

d Is a Manic Episode coded YES (current or past)?

Specify:

- If the Bipolar I Disorder is **current** or **past** or both
- With **Single Manic Episode**: If Manic episode (current or past) = YES and MDE (current and past) = NO
- **With Psychotic Features** Current: If 1b or 2a (current) or 2b (current) = YES
With Psychotic Features Past: If 1a or 2a (past) or 2b (past) = YES
- If the **most recent episode** is manic, depressed, mixed or hypomanic or unspecified (all mutually exclusive)
- **Unspecified** if the Past Manic Episode is coded YES AND Current (C3 Summary AND C4a AND C6 AND O2) are coded YES

	current	past
BIPOLAR I DISORDER		
Bipolar I Disorder	<input type="checkbox"/>	<input type="checkbox"/>
Single Manic Episode	<input type="checkbox"/>	<input type="checkbox"/>
With Psychotic Features		
Current	<input type="checkbox"/>	
Past		<input type="checkbox"/>
Most Recent Episode		
Manic	<input type="checkbox"/>	
Depressed	<input type="checkbox"/>	
Mixed	<input type="checkbox"/>	
Hypomanic	<input type="checkbox"/>	
Unspecified		<input type="checkbox"/>

e Is Major Depressive Episode coded YES (current or past) and Is Hypomanic Episode coded YES (current or past) and Is Manic Episode coded NO (current and past)?

Specify:

- If the Bipolar Disorder is **current** or **past** or both
- If the most recent mood episode is **hypomanic** or **depressed** (mutually exclusive)

	current	past
BIPOLAR II DISORDER		
Bipolar II Disorder	<input type="checkbox"/>	<input type="checkbox"/>
Most Recent Episode		
Hypomanic	<input type="checkbox"/>	
Depressed		<input type="checkbox"/>

f Is MDE coded NO (current and past) and Is Manic Episode coded NO (current and past) and Is C4b coded YES for the appropriate time frame and Is C7b coded YES?

or

Is Manic Episode coded NO (current and past) and Is Hypomanic Episode coded NO (current and past) and Is C4a coded YES for the appropriate time frame and Is C7c coded YES?

Specify if the Bipolar Disorder NOS is **current** or **past** or both.

	current	past
BIPOLAR DISORDER NOS		
Bipolar Disorder NOS	<input type="checkbox"/>	<input type="checkbox"/>

M.I.N.I. PLUS

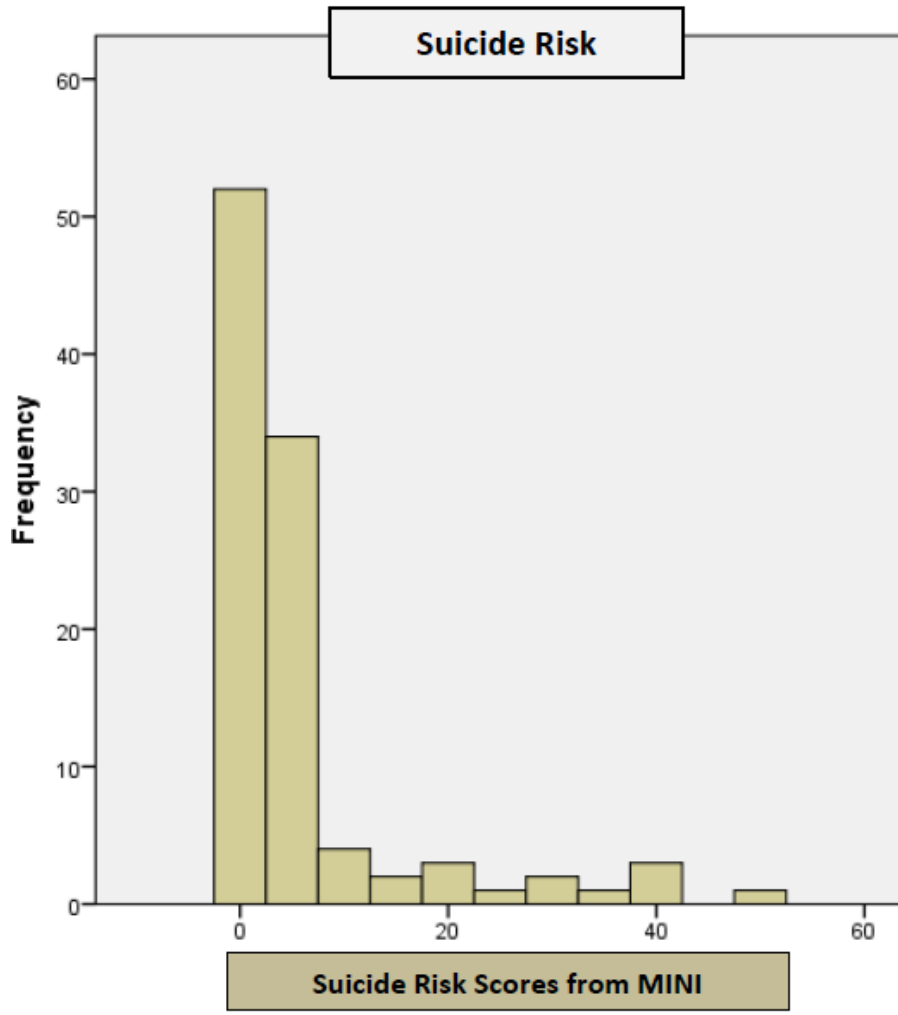
The shaded modules below are additional modules available in the MINI PLUS beyond what is available in the standard MINI. The un-shaded modules below are in the standard MINI.

These MINI PLUS modules can be inserted into or used in place of the standard MINI modules, as dictated by the specific needs of any study.

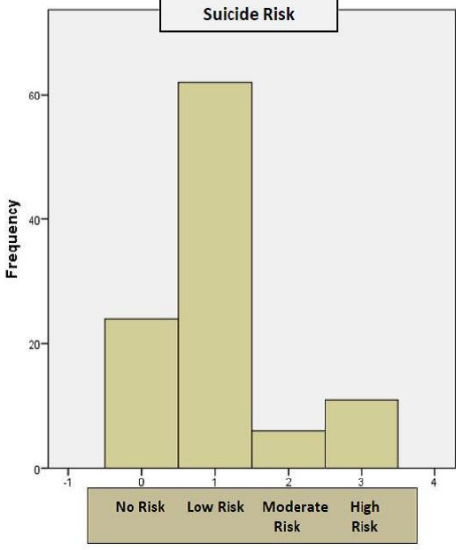
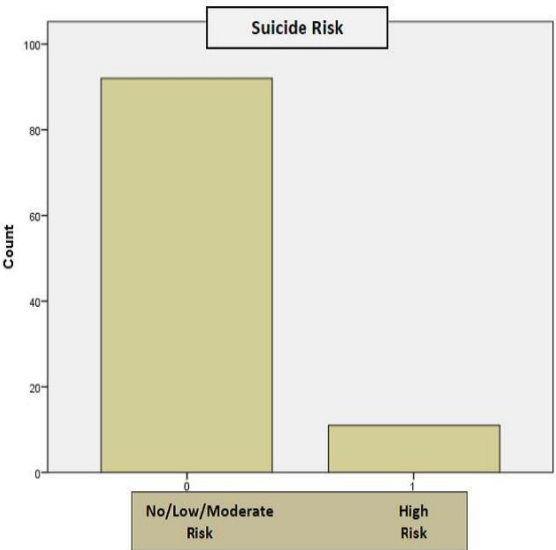
	MODULES	TIME FRAME
A	MAJOR DEPRESSIVE EPISODE	Current (2 weeks) Past Recurrent
	MOOD DISORDER DUE TO A GENERAL MEDICAL CONDITION	Current
	SUBSTANCE INDUCED MOOD DISORDER	Past Current
	MDE WITH MELANCHOLIC FEATURES	Past Current (2 weeks)
	MDE WITH ATYPICAL FEATURES	Current (2 weeks)
	MDE WITH CATATONIC FEATURES	Current (2 weeks)
B	DYSTHYMIA	Current (Past 2 years) Past
C	SUICIDALITY	Current (Past Month) Risk: <input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
D	MANIC EPISODE	Current
	HYPOMANIC EPISODE	Past Current
	BIPOLAR I DISORDER	Past Current
	BIPOLAR II DISORDER	Past Current
	BIPOLAR DISORDER NOS	Past Current
	MANIC EPISODE DUE TO A GENERAL MEDICAL CONDITION	Current Past
	HYPOMANIC EPISODE DUE TO A GENERAL MEDICAL CONDITION	Current Past
	SUBSTANCE INDUCED MANIC EPISODE	Current Past
	SUBSTANCE INDUCED HYPOMANIC EPISODE	Current Past
E	PANIC DISORDER	Current (Past Month) Lifetime
	ANXIETY DISORDER WITH PANIC ATTACKS DUE TO A GENERAL MEDICAL CONDITION	Current
	SUBSTANCE INDUCED ANXIETY DISORDER WITH PANIC ATTACKS	Current
F	AGORAPHOBIA	Current
G	SOCIAL PHOBIA (Social Anxiety Disorder)	Current (Past Month)
H	SPECIFIC PHOBIA	Current
I	OBSESSIVE-COMPULSIVE DISORDER	Current (Past Month)
	OCD DUE TO A GENERAL MEDICAL CONDITION	Current
	SUBSTANCE INDUCED OCD	Current
J	POSTTRAUMATIC STRESS DISORDER	Current (Past Month)
K	ALCOHOL DEPENDENCE	Past 12 Months
	ALCOHOL DEPENDENCE	Lifetime
	ALCOHOL ABUSE	Past 12 Months
	ALCOHOL ABUSE	Lifetime
L	SUBSTANCE DEPENDENCE (Non-alcohol)	Past 12 Months
	SUBSTANCE DEPENDENCE (Non-alcohol)	Lifetime
	SUBSTANCE ABUSE (Non-alcohol)	Past 12 Months

M	PSYCHOTIC DISORDERS	Lifetime
	MOOD DISORDER WITH PSYCHOTIC FEATURES	Current
	SCHIZOPHRENIA	Current
	SCHIZOAFFECTIVE DISORDER	Lifetime
	SCHIZOPHRENIFORM DISORDER	Current
	BRIEF PSYCHOTIC DISORDER	Lifetime
	DELUSIONAL DISORDER	Current
	PSYCHOTIC DISORDER DUE TO A GENERAL MEDICAL CONDITION	Lifetime
	SUBSTANCE INDUCED PSYCHOTIC DISORDER	Current
	PSYCHOTIC DISORDER NOS	Lifetime
	MOOD DISORDER WITH PSYCHOTIC FEATURES	Lifetime
	MOOD DISORDER NOS	Current
	MAJOR DEPRESSIVE DISORDER WITH PSYCHOTIC FEATURES	Past
	BIPOLAR I DISORDER WITH PSYCHOTIC FEATURES	Current
		Past
N	ANOREXIA NERVOSA	Current (Past 3 Months)
O	BULIMIA NERVOSA	Current (Past 3 Months)
	BULIMIA NERVOSA PURGING TYPE	Current
	BULIMIA NERVOSA NONPURGING TYPE	Current
	ANOREXIA NERVOSA, BINGE EATING/PURGING TYPE	Current
	ANOREXIA NERVOSA, RESTRICTING TYPE	Current
P	GENERALIZED ANXIETY DISORDER	Current (Past 6 Months)
	GENERALIZED ANXIETY DISORDER DUE TO A GENERAL MEDICAL CONDITION	Current
	SUBSTANCE INDUCED GAD	Current
Q	ANTISOCIAL PERSONALITY DISORDER	Lifetime
R	SOMATIZATION DISORDER	Lifetime
		Current
S	HYPOCHONDRIASIS	Current
T	BODY DYSMORPHIC DISORDER	Current
U	PAIN DISORDER	Current
V	CONDUCT DISORDER	Past 12 Months
W	ATTENTION DEFICIT/HYPERACTIVITY DISORDER (Children/Adolescents)	Past 6 Months
	ATTENTION DEFICIT/HYPERACTIVITY DISORDER (Adults)	Lifetime
		Current
X	ADJUSTMENT DISORDERS	Current
Y	PREMENSTRUAL DYSPHORIC DISORDER	Current
Z	MIXED ANXIETY-DEPRESSIVE DISORDER	Current

APPENDIX 5. HISTOGRAM FOR SUICIDE RISK SCORES FROM MINI



APPENDIX 6. SUICIDE RISK SCORE FROM MINI FOR (HIGH RISK VS. NO/LOW/MODERATE RISK) AND (NO RISK VS. LOW RISK VS. MODERATE RISK VS. HIGH RISK)



APPENDIX 7.VARIABLES DEFINED

Variables	Type of Variable	Coding	Operational Definition (Source)	Conceptual Definition
Age	Continuous	n/a	Years (Demographics Form)	An individual's duration of life.
Race	Binary	0- White 1- non-White	White or Non-white (Demographics Form)	Individuals unified by shared interests, beliefs, culture, or characteristics, including certain distinctive physical traits.
Marital Status	Binary	0- Never Married 1- Ever Married	To be "ever married" the individual is either currently married, divorced, separated, or widowed. (Demographics Form)	The condition of being married or unmarried.
Education Level	Categorical	0- No high school/GED 1- High school/GED 2- Some College 3- Associate/Bach	>12 years, High School, Some College, College Degree (Demographics Form)	The level of schooling that an individual has completed.
Religious Affiliation	Categorical	0- Christian 1- Catholic 2- other religion 3- No religion/agnostic	Christian, Catholic, other religion, or no religion/agnostic (Demographics Form)	The individual's association with the beliefs of a religion or a religious group.
Military Rank	Categorical	0- E1-E2 1- E3-E4 2- E5-E6	E1-E2, E3-E4, or E5-E6 (Demographics Form)	A hierarchy of relationships within branches of the military, often related to either level of experience or level of command.
Military Branch	Binary	0- Army 1- non-Army	Army, or Non-Army (Demographics Form)	The subdivisions of the US military.
Ever Deployed	Binary	0- Never Deployed 1- Deployed	Deployed ever, or Deployed Never	When a service member leaves

			(Demographics Form)	their families and relocates to a different area of the world to prepare for combat.
Combat Exposure	Binary	0- No Combat 1- Combat	Experienced Combat or did not Experience Combat (Demographics Form)	When an individual is exposed to violent warfare, involving armed fighting with enemy forces.
Total number of TBIs	Continuous	n/a	Total number of TBIs (OSU TBI-ID)	The total number of TBIs the individual has experienced in their lifetime.
Alcohol Dependence/Abuse	Binary	0- No Alcohol 1- Alcohol	An answer of “yes” to 3 or more (#12) questions or 1 or more (#13) questions on the Alcohol Dependence/Abuse section of the MINI	A pattern of drinking that results in harm to one’s self, health, work, or relationships, but does not necessarily imply addiction.
LOC	Binary	0- No LOC with TBI 1- Had a LOC with TBI	An answer of “yes” to “Were you knocked out or did you lose consciousness from this injury?” on the OSU-TBI.	A lack of responsiveness to people and other environmental stimuli.
Dazed or Confused without LOC	Binary	0- No Dazed/confused 1- Has been dazed/confused after a TBI	An answer of “yes” to “If not knocked out, did the injury cause you to become dazed or confused?” on the OSU-TBI.	Stunned or unable to think clearly.
Amnesia without LOC	Binary	0- No amnesia 1- Has amnesia after a TBI	An answer of “yes” to “If not knocked out, Did you forget what happened before or after?” on the OSU-TBI.	The loss of memories, such as facts, information and experiences.
Substance Dependence/Abuse	Binary	0- No Substance 1- Substance	An answer of “yes” to 3 or more (J2) questions or 1 or	A pattern of drug (not alcohol) use that results in

			more (J3) questions on the Substance Dependence/Abuse section of the MINI	harm to one's self, health, work, or relationships, but does not necessarily imply addiction.
Anxiety Disorder	Binary	0- No Anxiety 1- Anxiety	An answer of "yes" to 3 or more (N3) questions on the Generalized Anxiety Disorder section of the MINI	A mood disorder involving severe, ongoing anxiety that interferes with an individual's day-to-day activities.
Depression	Binary	0- No Depression 1- Depression	An answer of "yes" to 5 or more (A1-A3) questions and yes on (A4) question on the Major Depression section of the MINI	A mood disorder in which feelings of sadness, loss, anger, or frustration interfere with an individual's day-to-day activities for weeks or longer.
PTSD	Binary	0- No PTSD 1- PTSD	An answer of "yes" to 3 or more (H4) questions and 2 or more (H5) questions on the PTSD section of the MINI	When an individual has continued anxiety after a traumatic event that involved the threat of injury or death, which has resulted in psychological trauma.
Bipolar Disorder I or II	Binary	0- No Bipolar 1- Bipolar	An answer of "yes" to current hypomanic or manic episodes on the MINI	A mood disorder involving episodes of mania (or hypomania), which alternate with episodes of depression.
Psychotic Disorder	Binary	0- No Psychotic 1- Psychotic	An answer of "yes" to 1 or more "b" (K1-6) or 2 or more "b" (K1—K10) questions on the current psychotic disorder on the MINI	A disorder that negatively affects cognition, behavior, emotional responses, and ability to understand reality.
Headache	Binary	0- No headache after TBI	An answer of "yes" to "After the injury	Pain or discomfort in the head, scalp,

		1- Had headache after a TBI	did you have a headache caused by the injury that you did not have before or that got much worse?" on the OSU-TBI.	or neck.
Dizziness	Binary	0- No dizziness after TBI 1- Had dizziness after a TBI	An answer of "yes" to "After the injury did you have dizziness caused by the injury that you did not have before or that got much worse?" on the OSU-TBI.	An impairment in spatial perception and stability.
ringing in Ears	Binary	0- No ringing in ears after TBI 1- Had ringing in ears after a TBI	An answer of "yes" to "After the injury did you have Ringing in the ears caused by the injury that you did not have before or that got much worse?" on the OSU-TBI.	The perception of sound within the ear.
Fatigue/ Sleep Problems	Binary	0- No fatigue/sleep problems after TBI 1- Had fatigue/sleep problems after a TBI	An answer of "yes" to "After the injury did you have fatigue/sleep problems caused by the injury that you did not have before or that got much worse?" on the OSU-TBI.	Excessive feelings of being tired and/or difficulty falling asleep, staying sleep, or sleeping less than required.
Blurred Vision	Binary	0- No blurred vision after TBI 1- Had blurred vision after a TBI	An answer of "yes" to "After the injury did you have blurred vision caused by the injury that you did not have before or that got much worse?" on the OSU-TBI.	Vision that is not appear to be in focus.
Temper/ Irritability	Binary	0- No temper/irritability after TBI 1- Had	An answer of "yes" to "After the injury did you have difficulty	A mental state of being easily angered, annoyed or enraged.

		temper/irritability after a TBI	controlling your temper or irritability caused by the injury that you did not have before or that got much worse?" on the OSU-TBI.	
Difficulty Managing Stress	Binary	0- No difficulty managing stress after TBI 1- Had difficulty managing stress after a TBI	An answer of "yes" to "After the injury did you have difficulty managing stress or emotional upsets that was caused by the injury that you did not have before or that got much worse?" on the OSU-TBI.	The inability to control levels of stress in a way that disturbs everyday functioning.
Issues with Memory or Problem Solving	Binary	0- No issues with memory/problem solving after TBI 1- Had issues with memory/problem solving after a TBI	An answer of "yes" to "After the injury did you have issues with remembering things or solving problems caused by the injury that you did not have before or that got much worse?" on the OSU-TBI.	Difficulty with retaining or recalling information and/or difficulty in with problem solving.
Seizure	Binary	0- No seizures after TBI 1- Had seizures after a TBI	An answer of "yes" to "After the injury did you have seizures caused by the injury that you did not have before or that got much worse?" on the OSU-TBI.	Brief episodes of abnormal excessive or synchronous neuronal activity in the brain.
Total # of outpatient VA Mental Health Visits (at 30 days)	Continuous	n/a	The total outpatient mental health-related visits at 30 days (VA Medical Records- CPRS)	The total number of times outpatient Mental Health Services were utilized at the VA within 30 days prior to the interview.
Total # of inpatient	Continuous	n/a	The total inpatient mental health-	The total number of times inpatient

VA Mental Health Visits (at 30 days)			related visits at 30 days (VA Medical Records- CPRS)	Mental Health Services were utilized at the VA within 30 days prior to the interview.
Total # of outpatient VA Mental Health Visits (at one year)	Continuous	n/a	The total outpatient mental health-related visits at one year (VA Medical Records- CPRS)	The total number of times outpatient Mental Health Services were utilized at the VA within one year prior to the interview.
Total # of inpatient VA Mental Health Visits (at one year)	Continuous	n/a	The total inpatient mental health-related visits at one year (VA Medical Records- CPRS)	The total number of times inpatient Mental Health Services were utilized at the VA within one year prior to the interview.
Total Visits for non-TBI and non-Mental Health Services (at one year)	Continuous	n/a	The total non-TBI and non-Mental Healthcare visits at one year (VA Medical Records- CPRS)	The total number of times non-TBI and non-Mental Health Services (inpatient/outpatient) were utilized at the VA within one year prior to the interview.
Total Visits for non-TBI and non-Mental Health Services (at 30 days)	Continuous	n/a	The total non-TBI and non-Mental Healthcare visits at 30 days (VA Medical Records- CPRS)	The total number of times non-TBI and non-Mental Health Services (inpatient/outpatient) were utilized at the VA within 30 days prior to the interview.
Inpatient TBI Visit (30 days prior to interview)	Continuous	n/a	The total inpatient TBI-related visits at 30 days (VA Medical Records- CPRS)	The total number of times inpatient TBI Services were utilized at the VA within 30 days prior to the interview.
Outpatient TBI Visit (30 days)	Continuous	n/a	The total outpatient TBI-related visits at 30 days (VA	The total number of times outpatient TBI Services were

prior to interview)			Medical Records-CPRS)	utilized at the VA within 30 days prior to the interview.
Inpatient TBI Visit (1 year prior to interview)	Continuous	n/a	The total inpatient TBI-related visits at 1 year (VA Medical Records-CPRS)	The total number of times inpatient TBI Services were utilized at the VA within 1 year prior to the interview.
Outpatient TBI Visit (1 year prior to interview)	Continuous	n/a	The total outpatient TBI-related visits at one year (VA Medical Records-CPRS)	The total number of times outpatient TBI Services were utilized at the VA within 1 year prior to the interview.

APPENDIX 8. SIGNIFICANT DIFFERENCES FROM UNIVARIATE REGRESSIONS
AND CHI-SQUARE TESTS

Significant Differences between High Risk vs. No/Low/Moderate Risk	
<p><u>Chi-Squares</u> ($p \leq 0.2$, $**p \leq 0.5$)</p> <p>Age Marital Status Psychotic Disorder **PTSD Substance Abuse Dizziness Ringing in the Ears Sleep Problems **Blurred Vision **Managing Stress **Issues with Memory/Problem Solving **Seizures Race Education Religion</p>	<p><u>Univariate Regressions</u> ($p \leq 0.2$, $**p \leq 0.5$)</p> <p>**Age Marital Status Psychotic Disorder **PTSD Substance Abuse Dizziness Ringing in the Ears Sleep Problems **Blurred Vision **Managing Stress **Issues with Memory/Problem Solving **Seizures</p>

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