Acceptability Of The Interpersonal Needs Questionnaire As A Suicide Risk Screening Tool For Veterans In A Non Veterans Health Administration Primary Care Clinic

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ACCEPTABILITY OF THE INTERPERSONAL NEEDS QUESTIONNAIRE AS A
SUICIDE RISK SCREENING TOOL FOR VETERANS IN A NON VETERANS
HEALTH ADMINISTRATION PRIMARY CARE CLINIC

Jeffrey Michael Bird

A Dissertation Submitted to the Graduate Faculty of
GRAND VALLEY STATE UNIVERSITY

In
Partial Fulfillment of the Requirements

For the Degree of
Doctor of Nursing Practice

Kirkhof College of Nursing

December 2015
Dedication

This scholarly project is dedicated to my family. My children, Jessi, Nikki, Michael, Sara, Joey and Alivia. Your love provided the motivation to finish this project. My beautiful wife Julie: while we kept looking for the light at the end of the tunnel, you were my light in the tunnel. Thank you for reminding me of what is important in life.

I would also like to thank my parents, Ann and Jerry Lambrix, for giving me the many gifts in life that allowed me to pursue an advanced degree. I will never be able to fully express my gratitude.
Acknowledgments

I would like to acknowledge the support of the faculty and staff of Grand Valley State University and the Kirkhof College of Nursing for their assistance in giving me the tools to complete this work. I would like to especially acknowledge my dissertation chair Dr. Andrea Bostrom. Without your knowledge, encouragement, guidance and red pen this project would never have been completed. I cannot fully express my gratitude for everything you have done for me. I would also like to acknowledge my committee members Dr. Evelyn Clingerman, Dr. Harlan Holman and Mr. Steven Lipnicki for your guidance and insight in helping me complete this project. I would like to thank Dr. Yvette Petti, Dr. Cynthia Coviak, Dr. Ruthann Britnall and Dr. Diane Conrad for your kindness and vast knowledge you shared with me over the years.
Abstract
Suicide among veterans is a growing concern. The Department of Veterans Affairs (VA) estimates that a veteran dies by suicide once every 60-80 minutes with 18 to 22 veterans killing themselves every day. Many veterans receive healthcare in the community (outside of the VA), but are typically not identified in these settings. Veteran-centric policies are typically absent in settings outside of the VA. Screening for suicide risk at the primary care level has been largely ineffective with some patients dying from suicide within a week of a negative screen. The Interpersonal Needs Questionnaire (INQ), which measures thwarted belongingness and perceived burdensomeness, has empirical evidence as an effective tool for detecting suicide risk in multiple populations. The purpose of this project was to explore (a) the need to screen veterans for suicide risk in a non-VA setting, and (b) the acceptability of the INQ as a suicide risk screening tool among non-VA primary care providers. The need to screen veterans was assessed by counting the number of veterans presenting to a non-VA primary care clinic. During a 30 day period, 517 patients presented to the clinic with 19 (3.7%) of these self-identifying as a veteran. The acceptability of the INQ was assessed by providing an online educational media presentation on the concepts of the Interpersonal Theory of Suicide (IPTS) and the INQ along with a pre and posttest assessment. A total of 23 non-VA primary care providers completed the online education and pre/posttest assessment. The providers demonstrated a higher understanding of how the concepts of the IPTS related to suicide risk after the education. In addition, the participants expressed confidence in the INQ as a suicide risk screening tool and a high likelihood of making a mental health referral based on a positive score.
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CHAPTER 1

INTRODUCTION

Suicide is a national problem, ranking as the 10th leading cause of death in the United States with higher ranking among select groups (Katz, McCarthy, Ignacio, & Kemp, 2012). About 33,000 Americans per year, about 1 person every 15 minutes has died by suicide since 2001. Suicide rates are generally given as a number per 100,000 people for easier comparison across groups. The general rate of suicide has been between 10 -14 per 100,000 since recording began in 1950 (Center for Disease Control [CDC], 2015a). These numbers are somewhat diluted when considering all age groups from newborn through the very old are included. In addition to those who die by suicide, 1.1 million people report an unsuccessful attempt. More than 8 million people report having had serious thoughts of suicide with approximately 2.5 million of those developing a plan for killing themselves (U.S. Department of Health and Human Services [DHHS], 2012).

These numbers reflect a general representation of the prevalence of suicidal behavior in the United States. There may be a higher or lower prevalence within certain groups. For instance, women tend to have much higher instances of suicidal thoughts while men tend to comprise more successful suicides (DHHS, 2012). These numbers can be compounded greatly if only examining select groups such as white males, who make up the majority of successful suicides (DHHS). Veterans of the United States military comprise a group where suicide prevalence and incidence is a growing concern (Congressional Research Service [CRS], 2013). Historically, veterans and military suicide
rates have been very similar to, or slightly below, that of the general population (CRS). Since 2001, the rate of suicide among the nation’s veterans has been increasing (CRS).

While veterans in the United States make up less than 1% of the total population they are thought to account for as many as 20% of all suicides nationally (Department of Veterans Affairs [DVA], 2012). The latest data released by the DVA estimate that a veteran dies by suicide once every 60-80 minutes with 18 to 22 veterans taking their lives every day. Between 2005 and 2007 the suicide rate for veterans increased 26%. For male veterans in the 18-29 year age group the rate of suicide in 2007 was 56.77 per 100,000, which represents an increase from 44.99 from two years prior (DVA). These data represent all veterans, which is a large and heterogeneous group, all across this country. The alarming rise has gained the attention of the stakeholders for the veteran population including the Department of Defense (DoD), Veterans Health Administration (VHA), as well as Congress. Congress has enacted legislation in an attempt to help with this problem (CRS, 2013).

The VHA treats about 24% of the nation’s approximately 22 million veterans (Katz et al., 2012). The VHA has put into place many intervention strategies to combat suicide in the veteran population. Among these are the implementation of a suicide prevention coordinator at each outpatient facility, a 24 hour crisis line, and screenings for certain risk factors such as Post Traumatic Stress Disorder (PTSD) and depression at primary and specialty care levels (CRS, 2013). Unfortunately, 76% of the veteran population do not receive these interventions because they receive their healthcare in the community. Veterans are not likely to be identified in the community health care setting and no apparent network of providers exists outside of the VHA to effectively screen
veterans for suicide risk. Additionally, screening for suicide risk both at the VHA and in
the community has been ineffective (Luoma, Martin, & Pearson, 2002).

Denneson et al. (2010) examined VA health care contacts among veterans who
had committed suicide, and found that 63% of veterans had one or more primary care
contacts with the VA in the year prior to suicide. The author noted that the mean time
from contact with primary care to death was 42 days, and that 72% of the veterans who
were screened for suicidal ideation at the primary care visit, were screened negatively.
These data raise the questions: (a) is a more acceptable, effective process available to
screen veterans for suicidal risk, and (b) how many veterans are presenting to a non-VHA
primary care clinic and does this number make it necessary to identify and screen
veterans for suicide risk within the clinic?

The Interpersonal Theory of Suicide (IPTS, Joiner, 2005; Van Orden et al., 2010)
is a recent theory of suicide with a growing base of supporting empirical data for its use.
The theory is based on three constructs. The first two, considered interpersonal
constructs, are (a) thwarted belongingness, which is a feeling of being alone, and (b)
perceived burdensomeness, the thought that one is a burden to those around him or her.
These two feelings must be present in order for a person to have suicidal ideation. The
third construct, the acquired capability for suicide involves a reduced fear of death as
well as an increase in pain tolerance. According to the IPTS these features must be
present for a person to progress from suicidal ideation to an actual lethal attempt (Van
Orden et al.)

The utility of this theory is many of the extant suicide risk factors are mediated
through the theory’s two interpersonal constructs (Van Orden et al., 2010). This gives an
opportunity to screen for a great number of risk factors for suicide by screening for the presence of thwarted belongingness and perceived burdensomeness. To this end, Van Orden, Cukrowicz, Witte, and Joiner (2012) developed the Interpersonal Needs Questionnaire (INQ). This questionnaire, which was originally 25 items, but has been tested in a variety of forms, has demonstrated effectiveness as a means of predicting suicidal intent. Bryan (2011) tested a 10 question form of the INQ on military personnel, demonstrated that the 10 question form (INQ-10) is a valid tool to assess suicidal ideation in military personnel even though the personnel denied suicidal intent on other exams. Moreover, a positive screen on the INQ-10 was associated with a 1 in 5 chance of suicidal ideation. A negative screen on the INQ-10 was associated with a 1 in 200 chance of suicidal ideation (Bryan, 2011).

Based on the prevalence of suicide among the veteran population, the lack of an integrated network for veterans in the community, and the evidence of a more effective means of screening for risk of suicidal ideation with the use of the INQ, the purpose of this project was to measure the acceptability of INQ as a suicide risk screening tool for veterans within a community non-VHA primary care clinic. There were two goals of this project. The first goal was to assess the necessity of screening veterans within a community health care setting. This was accomplished through measuring the number of veterans presenting to a primary care residency clinic at a medical center in a large metropolitan area in the Midwest over the course of 30 days. The second goal was to measure the acceptability of using the INQ among primary care providers. This was accomplished by providing online training to providers at both a primary care residency clinic at a medical center in a large metropolitan area in the Midwest and nurse
practitioners at a large state professional organization. The online training, which was sent through email, included information on veteran suicide, the IPTS and the use of the INQ. An online survey with a pre and posttest accompanied this educational offering.
In order to keep a large scholarly project organized conceptual frameworks and theories are needed. This project uses four integrated frameworks and theories including the Interpersonal Theory of Suicide (Joiner, 2005; Van Orden et al., 2010), The Promoting Action on Research Implementation in Health Systems (PARIHS) model (Kitson, Harvey, & McCormick, 1998), The Public Health Approach to Violence Prevention which is also called the Public Health Framework (Goldsmith, Pellmar, Kleinman, & Bunney, 2002), and the Analyze Design Development Implement Evaluation (ADDIE) framework (Forest, 2014).

**Interpersonal-Psychological Theory of Suicide**

The IPTS (Joiner, 2005; Van Orden et al., 2010) provided the conceptual framework for the understanding of suicide for this project. This theory proposes that in order for people to die by suicide, they must possess both the desire to do so and the capability to do so. In order to have the desire for suicide, the theory suggests that the presence of either of the two interpersonal constructs, thwarted belongingness or perceived burdensomeness, will cause a person to experience passive suicidal ideation. In order for the person to go from a form of suicidal thought or sub-lethal behavior to a lethal behavior, the theory postulates that the presence of the third construct, acquired capability for suicidal behavior, must be present. This progression from suicidal thoughts
to attempts is explained through four separate hypotheses which act along the suicide pathway. Based on this pathway a person may progress through four separate phases of suicidal thoughts or behaviors. In order to understand this pathway the three constructs of the theory must be understood.

**Thwarted Belongingness**

Thwarted belongingness (TB), which is also described as social alienation or isolation, is described as a low sense of belongingness to a particular group or entity. In particular, people who experience thwarted belongingness may not believe they are an integral part of a family, group of friends or another group the person values (Van Orden, Witte, Gordon, Bender, & Joiner, 2008). Within the theory, thwarted belongingness is described as a multidimensional construct with two subordinate latent variables. These variables are described as loneliness and the absence of reciprocally caring relationships.

Loneliness within the IPTS is conceptualized as a person having too few social connections. Accordingly a person expressing the loneliness component of thwarted belongingness might make a statement such as “I don’t have any friends.” In contrast, lack of reciprocally caring relationships is defined in the theory as a relationship in which people feel they are either not providing care or receiving care from others. People experiencing this component of thwarted belongingness might make a statement such as “My friend does not care about me” or “My husband never listens to me” (Van Orden et al., 2010).

Additionally each of these constructs has six observable risk/protective factors that load onto them. These factors are associated with either elevated or decreased risk for lethal suicide attempts. Loneliness includes: (a) self-reported loneliness, (b) pulling
together effects (protective), (c) caring letters interventions (protective), (d) presence of marriage/children/friends (protective), (e) living alone/few social supports/non-intact family and, (f) seasonal variations. Absence of reciprocal care includes: (a) social withdrawal, (b) low openness to experience, (c) residing in a single jail cell, (d) domestic violence, (e) childhood abuse and (f) familial discord. (Appendix A illustrates the multidimensional nature of thwarted belongingness.)

The IPTS has two assumptions that relate to thwarted belongingness. The first assumption is that thwarted belongingness is a dynamic cognitive-affective state rather than a stable one. This state can be influenced by both interpersonal and intrapersonal factors such as a person’s environment, proneness to interpret other behaviors and current emotional states. This means that a person’s degree of belongingness can vary greatly over time. The second assumption is that the need to belong is dimensional rather than categorical in nature. This means that a person does not need to fully experience thwarted belongingness in order for it to be significant. While thwarted belongingness can be a significant predictor of suicidal desire alone, the IPTS posits that suicidal desire is more likely when thwarted belongingness and perceived burdensomeness are both present (Van Orden et al., 2010).

**Perceived Burdensomeness**

Perceived burdensomeness (PB) is described as the feeling that one’s existence is a burden on family, friends, acquaintances and/or society as a whole. This feeling may be accompanied by thoughts that one is worth more dead or that one’s family may somehow be better off without him or her. Like thwarted belongingness, the IPTS describes perceived burdensomeness as a multidimensional construct with two latent, subordinate...
variables. These variables are described as self-hatred and liability (Van Orden et al., 2010).

Self-hatred, within the IPTS, is defined simply as hating one’s self and is characterized by the thoughts of “I hate myself” or “I am worthless or useless.” Liability is the belief that the person is so flawed as to be a liability to others. This variable is characterized by the thoughts of “I make things worse by being around” or “I am causing bad things to happen.” Each of these subordinate variables has observable risk factors that load onto them within the theory.

The liability factor has six identifiable risk factors: (a) distress from physical illness, (b) distress from unemployment, (c) distress from incarceration, (d) distress from homelessness, (e) expendability or being unwanted, and (f) the belief one is a burden on the family. Self-hate, on the other hand, has three identifiable risk factors: (a) low self-esteem, (b) self-blame or shame and, (c) agitation. (Appendix B illustrates the multidimensional nature of perceived burdensomeness.)

Perceived burdensomeness, within the IPTS, is considered a dynamic cognitive state in addition to being a dimensional phenomenon. So just like thwarted belongingness, a person’s level of perceived burdensomeness is likely to vary over time. It is also likely to be influenced by, and have an influence on, the person’s perception of thwarted belongingness. According to the IPTS, these two constructs are considered distinct but related. For instance a person with children may have a factor that is protective for thwarted belongingness but could also be a risk factor for perceived burdensomeness.
The two interpersonal concepts have a common risk factor, mental illness that is believed to influence both. The authors suggest that mental illness, a broad category within the theory, exerts influence on both TB and PB and is not limited by subordinate variables. No distinction is made in the theory to individual types of mental illness such as depression, Post-Traumatic Stress Disorder (PTSD) or bipolar disorder. All of the states of mental illness are thought to influence both constructs. For example, depression in a person could manifest itself as perceived burdensomeness or thwarted belongingness either separately or together.

The presence of the two interpersonal constructs influences whether the person will have passive suicidal ideation. According to the IPTS, in order for people to go from a state of suicidal ideation to actually performing a lethal event they must possess the final construct of the theory, the acquired capability for suicide. While this construct is not a portion of this project it is important in understanding the suicidal pathway of the IPTS.

**Acquired Capability for Suicide**

As was noted earlier, the prevalence of suicidal ideation is far greater than the prevalence of either lethal or near lethal self-acts. According to the IPTS, this is because of an evolutionary safety mechanism in which humans inherently want to live. In order for people to overcome this inherent desire to live, they must acquire the capability to perform a lethal action on themselves. Like the interpersonal constructs, the acquired capability for suicide has two subordinate variables. These variables are the lowered fear of death and elevated physical tolerance for pain (Van Orden et al., 2010).
Both of these variables are thought to be dimensional and can vary over time. Additionally, both variables may be altered through repetitive “training.” For instance, military members would likely have a lower threshold for both of these subordinate variables through their military training particularly if the person was heavily trained in combat arms (Bryan, Morrow, Anestis, & Joiner, 2010). In another example, suicide bombers may have a lower fear of death because they believe their death will result in martyrdom and they will be held in a high place in the afterlife. Further, people who commit multiple sub-lethal actions prior to a “successful” suicide attempt are thought to be habituating themselves to suicide (Van Orden et al., 2010).

The construct of acquired capability for suicide has five observable risk factors. These five risk factors are: (a) impulsivity, (b) exposure to suicidality, (c) combat exposure, (d) suicide attempts, and (e) childhood maltreatment. (Appendix C illustrates the multidimensional nature of the acquired capability of suicide.) For the purposes of this project, the threshold for acquired capability is thought to be reduced or absent in the target population of veterans for the above mentioned reasons. Understanding these constructs is important in order to further understand how a person progresses through the causal pathway to lethal suicidal behavior (Van Orden et al., 2010).

**The Proximal Causal Pathway to Suicide**

The proximal causal pathway to suicide consists of four hypotheses that describe how a person progresses from a zero risk to a lethal or near lethal suicide attempt. Within this pathway are also the theory’s three definitions of suicidal thoughts (Van Orden et al., 2010).
The first hypothesis of the theory is that people who possess either thwarted belongingness and/or perceived burdensomeness will experience passive suicidal ideation. Passive suicidal ideation, which is the first stage in the pathway, is described as people having thoughts of wishing they were dead or having never been born (Van Orden et al., 2010).

The second hypothesis of the theory explains how a person can progress from passive suicidal ideation to a state of active suicidal desire. Suicidal desire is the state when people may have thoughts of wanting to kill themselves versus passive ideation in which they simply wish for death but do not actively consider killing themselves. This state is thought to develop in the presence of both thwarted belongingness and perceived burdensomeness. In addition, the person must have also lost hope of this condition ever improving (Van Orden et al., 2010).

The third hypothesis of the theory explains how a person progresses from the state of active suicidal desire to the state of suicidal intent. According to the theory, in order for people to have suicidal intent they must have the desire to die by suicide and have developed, or thought of a way, to commit the lethal action. In order for people to progress to this stage, they must have either habituated themselves to dying or otherwise possess a reduced fear of death. Reduced fear of death is the first component of the acquired capability for suicide (Van Orden et al., 2010).

The fourth and final hypothesis of the pathway is the actual fatal or near fatal attempt by the suicidal person. In order for people to turn their suicidal intent into a lethal attempt they must possess the second portion of the acquired capability for suicide, increased pain tolerance (Van Orden et al., 2010). Increase pain tolerance is needed
according, to the theory, in order for a person endure the pain or the perception of pain that would occur with the suicidal action. (The complete proximal causal pathway to suicide is depicted in Appendix D.)

**Conclusion**

The four hypotheses of the IPTS describe the pathway a person with no thoughts of suicide might travel to the final stage of death or near death by suicide. This pathway also provides points for screening and intervention. Many of the current screening protocols use some form of screening within either suicidal desire or suicidal intent. These screening questions generally ask questions such as “are you having thoughts of killing yourself” (desire) and if so “do you have a plan” (intent). These screening tools are important to help identify acute suicidal intent but are of little use in screening for general risk (Gaynes et al., 2004). This project will be using the INQ (Van Orden, Cukrowicz, Witte, & Joiner, 2012) which measures thwarted belongingness and perceived burdensomeness as a means of screening related to the first hypothesis (passive suicidal ideation).

**The PARIHS Framework**

The Promoting Action on Research Implementation in Health Systems (PARIHS) model (Kitson, Harvey, & McCormick, 1998) served as the framework for the implementation of the educational media presentation within the organization. This framework posits that in order for an intervention to be successfully implemented three inter-related elements must be considered. The three elements include: evidence, context and facilitation (Kitson et al.).
Evidence

The PARIHS model considers evidence from a broad perspective with four categories of evidence included in the model: (a) research, (b) clinical experience, (c) patient experience or preference, and (d) local data/information. Evidence from different sources can have different meaning and different relevance for a project (Rycroft-Malone, 2004). In this project, the main focus for evidence was on research focusing on the IPTS and INQ. Certain criteria must be met in order for research to be considered high value in the model (Rycroft-Malone, 2004).

The research must be well-conceived, designed and executed and must be appropriately relevant. Melnyk and Fineout-Overholt (2011) describe the critical appraisal of evidence as satisfying three questions: 1. Are the results of the study valid? (Did the researchers use the best research methods possible?) 2. Were the results reliable? (What were the results, how were they obtained, how large was the sample and can it be applied to other populations?) 3. Are these results applicable to the project? (Are the subjects similar to the population in question?) These questions will be applied in examining the research evidence relevant to this project.

Context

The term context within the PARIHS framework (Kitson et al., 1998) refers to the particular setting in which the intervention will be translated into practice. Though this setting could be anywhere healthcare is delivered, for this project the context was the primary care residency clinic of a large metropolitan medical center located in the Midwest and a state nurse practitioner organization. Under this model, contextual factors that influence the successful implementation of evidence into practice fall within three
categories: culture, leadership and evaluation. Each of these themes has areas that are important to consider within the organization.

**Culture.** The underlying culture of an organization can be one of the key components that will influence successful implementation of practice change. Several factors are important to assess when looking at the organization’s readiness for change and the factors are rated as either high or low (Kitson et al., 1998). An example includes defining the culture in terms of values and beliefs. In order for the organization to be rated high in value and belief there must be a clear definition of the prevailing values of the organization. If the organization did not have an explicitly written values statement or if this statement was unclear, the organization would be rated low in this regard. Some other key areas to assess in culture include: values of staff and clients, promotion of learning, consistency of roles, teamwork, reward/recognition and resources.

**Leadership.** Leadership plays a key role in the development of the culture within an organization. Leaders may be the key stakeholders within an organization who influence the success of a proposed intervention. Similar to culture, the leadership of an organization should be rated from low to high. A leadership example includes assessing for the presence of transformational leadership within the organization. Organizations that have leaders who utilize traditional command and control leadership styles are rated as low. However, organizations that have key leaders who facilitate staff development and promote a fostering of ideas are rated as high. Some other examples include: role clarity, effectiveness of teamwork, inclusive decision making processes and enabling and empowering of staff (Rycroft-Malone, 2004).
**Evaluation.** The evaluation processes within an organization are important when implementing a project. In order to understand how the outcomes of an intervention are working, a clear evaluation process within the organization should be identified. Additionally, how people are evaluated within an organization also helps better understand both the culture and leadership of the organization. An organization should have clear feedback for individuals, teams and the system. It should also use multiple sources of information related to performance as well as using multiple methods of evaluation, such as: clinical, performance, economic or experience (Rycroft-Malone, 2004).

**Facilitation**

Within the PARIHS framework of Kitson et al. (1998), facilitation is the process of enabling or making the process of implantation of evidence into practice possible. This is carried out by a facilitator, who is the person responsible for taking on the role and doing the tasks which make the implementation process happen. Some of the roles and tasks that must be undertaken include: (a) developing and sustaining partnerships within and outside of the target organization, (b) translating a theory into a practice model which can be implemented into an organization, (c) educating and training personnel in regard to the evidence-based practice, and (d) designing and implementing tools to measure the outcomes of the proposed intervention. Additionally the facilitator is responsible for assessing the context of the organization. It is the facilitator’s job to adapt the project to overcome the weaknesses of the organization while effectively using its strengths. In essence, the facilitator is responsible for all aspects of the project from beginning to end (Kitson et al.).
The Public Health Approach

The overall framework that guided this project was the Public Health Approach to Violence Prevention which is also called the Public Health Framework (Goldsmith, Pellmar, Kleinman, & Bunney, 2002). This framework has emerged as the leading suicide prevention framework for the Center of Disease Control (CDC) and the World Health Organization (WHO). Additionally, it is the framework used in the Surgeon Generals Strategic Plan for Suicide Prevention (U.S. Department of Health and Human Services, 2012). This framework was adopted because it explores the patterns and risk factors that lead to suicidal behavior in a group or population as opposed to an individual. The framework has five main components or steps along the pathway and these steps may occur sequentially but may also overlap. Further, each step serves to inform the step both before and after (Goldsmith et al.)

Step 1 – Define the Problem

In this step the problem is clearly defined through the systematic collection of prevalence data. The collection of data related to suicide rates or suicidal ideation and the circumstances surrounding these incidents is known as surveillance. This step has several guiding questions. What needs to be prevented? How many people are affected by this problem? Who are they? When and how is the problem occurring? Additionally, if a sub group is identified, these questions cannot only be applied to that group but comparisons can be made between groups based on these and other relevant questions. For this project military veterans of the United States are the identified sub group who are at greater risk for suicide.
With relation to suicide and other violence, these data can come from a variety of sources. Possible sources include the National Violent Death Reporting System (NVDRS) and the Web-based Injury and Statistics Query and Reporting System (Center for Disease Control, 2015b). Some special populations have their own methods of maintaining surveillance related to suicide. Suicide by veterans is monitored using two methods. The first is to monitor the NVRDS, the other is combining data from the National Death Index with VHA data to determine the number of suicides among those enrolled with the VHA (Congressional Research Service, 2013).

**Step 2 – Identify Risk and Protective Factors**

In order to develop interventions that have a better chance of preventing suicides, it is important to understand what places a person at risk for suicide. Risk factors are characteristics that make a person more likely to have suicidal thoughts or behaviors. Risk factors can be both modifiable, such as alcohol abuse, and non-modifiable, such as a childhood trauma. Risk factors are generally classified within the three subcategories of biopsychosocial (mental disorders, family history, etc.), environmental (job loss, access to means, etc.) and sociocultural (isolation, stigma, etc.). Protective factors are a counterbalance to risk factors and provide some decrease in risk for suicide (Appendices A and B illustrate how risk factors for suicide relate to the constructs of the IPTS). Some examples of protective factors are effective care for a mental disorder or a strong support system for the individual (DHHS, 2001). Risk and protective factors are typically identified through either cohort studies or case-control studies, with the latter more common. The use of medical records, physiological autopsy and interviews with family and friends of victims are common methods of obtaining data (DVA, 2012).
Step 3 – Develop and Test Interventions

Suicide prevention interventions are designed to either reduce risk factors for suicide or enhance protective factors with some designed to do both. Interventions generally attempt to influence the same three categories of risk factors (biopsychosocial, environmental and sociocultural) though some may address more than one of these categories. Interventions are also classified along the Universal, Selective and Indicated (USI) model (Goldsmith et al., 2002).

Universal interventions are those that attempt to influence an entire population. These interventions can seek to influence a large population such as the nation or a city. They can also target a specific at-risk population such as all veterans or all Native Americans. Some examples of these types of interventions include media campaigns for suicide awareness or the national and veterans crisis hot line (Goldsmith et al., 2002).

Selective interventions address smaller subsets of the entire population and are generally geared toward people at a higher risk for becoming suicidal. These interventions may target people with depression or veterans being seen at the primary care office. Examples of this type of intervention may include coping skill training, screening programs or “gatekeeper” type training for care givers/providers (Goldsmith et al., 2002).

Indicated interventions are used with specific groups within a population who have been identified as being at risk for suicide. These interventions can range from psychotherapy for someone with acute suicidal thoughts to ongoing counseling for people who have previously expressed suicidal desire (Goldsmith et al., 2002).
Interventions should undergo rigorous testing before they are ready for large scale implementation and adoption. This testing includes several stages which will ensure the intervention is not only effective but also feasible, safe and ethical. From initial pilot studies to small scale implementations in specific settings, the question of whether the interventions meet the above criteria should be continually measured and reported. In this way interventions can be tested to ensure they are ready. Additionally, specific sites for the intervention must be evaluated. A particular intervention may have strong evidence for its use in one setting but be completely inappropriate for another (DHHS, 2001).

**Step 4 – Implement Interventions**

Within the framework, this stage is generally reserved for large scale implementation. However, it can be adapted to serve the purpose of further testing an intervention at a specific site. No specific implementation guideline is contained in the Public Health Framework (Goldsmith et al., 2002). In order to effectively implement an intervention into a specific setting, an implementation science framework is needed and must be integrated into this stage. An example of this type of framework is the PARIHS model (Rycroft-Malone, 2004).

**Step 5 – Evaluate Effectiveness**

Evaluating both the intervention and the implementation are keys to understanding effectiveness as well as giving the researcher the ability to make changes for further dissemination. Most interventions for suicide prevention today are not evidence based and their effectiveness has not been formally evaluated (DHHS, 2012). This is largely thought to be the result of a rush to put interventions into place once the problem became widely known as well as the difficulty in doing research related to
suicide (DHHS, 2012). For this project the PARIHS framework will be used for the purpose of guiding the implementation process. The intervention for this project will be based on the Interpersonal-Psychological Theory of Suicide (IPTS).

**The ADDIE Framework**

The Analyze Design Development Implement Evaluation (ADDIE) framework (Forest, 2014) will be used to guide the educational intervention for this project. This framework has been successfully used by numerous entities to implement educational interventions since it was first developed for the United States Army in 1975 (Forest, 2014). The framework is simple and aligns well with the Public Health Approach (Goldsmith et al., 2002). It has five stages to guide educational development from analysis of needs through the final evaluation, though the stage of evaluation is fluid and is used within each of the stages.

**Analysis**

The first stage of the framework is analysis of the target audience or organization. The goals for this stage of the framework are (a) determining the knowledge gaps for the particular audience within the organization, (b) determining what information will be used to fill those gaps and what the participants will learn through the education, and (c) what education methods (lecture, discussion, email, etc) will be used to deliver the information in order to have the highest rate of participation and learning opportunity (Forest, 2014).

**Design**

The second stage of the framework is the design of the educational intervention for use. Some keys to this stage of the framework include (a) the type of media that will
be used to deliver the education, (b) the resources that are needed to deliver the instruction to the target audience, (c) time for the various stages of the project, and (d) goals of the educational intervention including how comprehension will be measured. This stage deals with all the details of how and when the project will be completed (Forest, 2014).

**Development**

The third stage of the framework involves the development of the educational intervention. This stage uses the information gained in the previous two stages to physically create and test the intervention in the project. It is important during this stage to ensure the intervention and the media can be accessed by the participants. Additionally, the intervention should fit within the time frame established during the second stage of the project (Forest, 2014).

**Implementation**

The fourth stage of the framework involves the actual implementation of the intervention. This stage will be variable depending on the actual method of instruction and the time frames involved. Regardless of the methods used it is important for the facilitator of the project to be available for questions and for refinement of the intervention in real time. The facilitator should have envisioned several “what if” scenarios during the design and development phases such that they are relatively prepared in case the intervention does not go as planned. In this phase the facilitator will also be collecting data to ensure the intervention is going as planned and that the data are being collected in the method set forth in the previous phases (Forest, 2014).
Evaluation

The final phase of the framework is evaluation. While evaluation is presented as the final stage of the framework, it is actually embedded throughout all the phases. Evaluation includes formative and summative evaluation. Formative evaluation takes place throughout the project and helps to strengthen the project prior to and during the implementation phase. Formative evaluation is ongoing throughout the project. Summative evaluation occurs at the end of the project and is used to determine whether the goals of the project were met as well as determining how the project can be improved upon for the future (Forest, 2014).

A similar method of instructing primary care providers was used by Adams et al. (2012), who used a series of educational presentations to increase the knowledge and use of interventions for people with Chronic Obstructive Pulmonary Disease (COPD). Adams et al. used learning modules to instruct 351 primary care providers about the Global Initiative for Chronic Obstructive Lung Disease (GOLD) recommendations and followed the ADDIE model for the educational presentation.

Adams et al.’s (2012) educational offering was a 1 day Continuing Education (CE) class. The class was a mixture of video instruction and small group workshops. A pre-test and post-test were administered to the participants using an audience response system. These tests were designed to measure self-confidence and knowledge/comprehension related to the GOLD standards. Of those attending the training 54.1% had never used the GOLD recommendations prior to taking the class. The authors reported a significant increase in participant’s confidence in all measured areas related to using the GOLD recommendations. Additionally, the mean score for
knowledge significantly improved from 77.1% to 94.7%. In a follow up survey, 69.7% of the respondents reported having implemented the GOLD recommendations into their practice for managing patients with COPD.

While this study does not use the same instructional method as that proposed in this project, it does demonstrate that instruction designed using the ADDIE framework is effective in increasing both the confidence and knowledge of primary care providers related to a practice change.

Summary

All four of these frameworks and theories were used together for this project. The public health framework (Goldsmith et al., 2002) provided five steps for suicide prevention and guided the overall structure of the project. The PARIHS framework (Kitson et al., 1998) was used throughout the project to guide implementation within the selected organization. The IPTS (Van Orden et al., 2010) was used in step 2 and 3 of the public health framework (Goldsmith et al.) and demonstrated how the two interpersonal constructs of thwarted belongingness and perceived burdensomeness can be used to add confidence to the assessment of proximal risk factors for suicide ideation at a non-VHA primary care clinic. The first portion of PARIHS model regarding evidence will overlay the entire framework. Finally, the ADDIE model (Forest, 2014) was used to guide the educational intervention within the project. The interaction of the models is illustrated in Appendix E.
CHAPTER 3

LITERATURE REVIEW

The purpose of this chapter is to review the relevant literature related to the problem of suicide among veterans and the usefulness of the Interpersonal Theory of Suicide (IPTS) and the Interpersonal Needs Questionnaire (INQ) to identify those at risk for suicide. The literature review for this project was guided by both the public health framework and the interpersonal theory of suicide.

The main review of literature was conducted to find empirical evidence supportive of the theory as a framework for suicide prevention. Specifically, literature was reviewed related to the two interpersonal constructs of perceived burdensomeness and thwarted belongingness, as well as their interaction relative to their prediction of suicidal ideation. Several of the reviewed articles used either military or veterans as the sample.

The search for literature was conducted using the main search tool on the Grand Valley State University (GVSU) library website. This search tool uses multiple databases. Search terms were used individually or in various combination and included “perceived burdensomeness,” “thwarted belongingness,” “suicide,” “interpersonal theory of suicide,” “veteran,” “Veterans Health Administration,” “military,” “screening,” “prevention,” and “primary care.” Literature from the reference lists of selected articles was also reviewed.
The literature reviewed has some common limitations. First, all of the studies examining the predictability of suicidal ideation use a cross sectional, correlational design. This design gives a “snap shot” in time and does not allow for temporal precedence of the variables being measured. This means that while the variables may show correlation, it is not clear what role each variable plays in terms of cause and effect. Second, all of the studies use self-report questionnaires to measure the variables. This method creates the possibility of bias. In addition, the possibility of untruthful answers cannot be excluded. This is somewhat likely given that suicide screening tools have been largely ineffective for this very reason (Gaynes et al., 2004).

**Defining the Problem**

**Suicide in the United States Veteran Population**

Increasing suicide among the veterans of the United States has become an issue over the last 10 years, as noted earlier. Unfortunately, the true rate of suicide among the nation’s veterans is unknown as no national surveillance system currently exists (Congressional Research Service, 2013). The lack of national veteran suicide surveillance makes it impossible to know with certainty the number of veterans killing themselves in a given period of time. It is also nearly impossible to compare rates of suicide among veterans who are treated at the VHA versus those who are not. These data would be useful in knowing if veterans who are treated at the VHA are at higher or lower risk for suicide compared to non-VHA treated veterans.

Katz, McCarthy, Ignacio and Kemp (2012) conducted a study to compare the rates of suicide for veterans who used the VHA versus those who did not during the timeframe of 2005 to 2008. To this end, they estimated the rate of non-VHA veteran
suicide in the 16 states that fully participate in the National Violent Death Reporting System (NVRDS). These data were then compared with those who were treated by the VHA in the same 16 states during this period of time. Among veteran women, approximately 21.8% utilized the VHA for their healthcare. The average rates of suicide over the 4 years for female veterans (11.36/100,000) were found to be significantly lower than those reported by male veterans (28.75/100,000). The rates of suicide for female veterans did not differ significantly from 2005 to 2008 nor were the rates high enough to make meaningful comparison between VHA utilizers versus non utilizers.

In veteran men, approximately 17.9% utilized VHA services. Rates of suicide were found to be significantly higher among those veterans who utilize VHA services versus those who did not in all 4 years. The overall rate of suicide increased in both groups over that period of time with those utilizing the VHA going from a rate of 36.74 (per 100,000) in 2005 to a rate of 40.09 in 2008. The suicide rate for veterans who did not use VHA services increased from 26.66 in 2005 to 28.75 in 2008.

One major demographic with significant improvements in suicide rates was veteran men aged 18-29 who utilized VHA services. In 2005, their rate of suicide was 53.18/100,000, which was the highest of all the demographic groups. In 2008, this rate dropped to 33.24/100,000. This was the lowest rate among all the groups for that year. This is important since this group is largely made up of veterans from Operation Iraqi Freedom (OIF), also known as the war in Iraq (2003 -2011), and Operation Enduring Freedom (OEF), also known as the war in Afghanistan and the global war on terror (2001 to present).
While the information demonstrating a decline within the 18-29 year old male subgroup treated at the VHA is encouraging, the overall rate of suicide continued to increase over this period in both VHA treated and non-VHA treated groups. The results are limited in that they may not be generalizable across the entire United States nor the entire VHA system as only the 16 states from the NVRDS are represented. The high rate of suicide among veterans is alarming and does set the basis of the problem. The ability to accurately screen veterans who are at higher risk for suicide and subsequently help them acquire/access appropriate assistance prior to their suicide attempts may also present a problem.

**VHA Visits before Death by Suicide**

Many people who die by suicide are seen by a primary care or mental health provider in the months prior to their death (Luoma, Martin, & Pearson, 2002). With the high rates of suicide for veterans being treated by the VHA, it is important to know if those taking their own lives are seen at the VHA, and the content of that appointment.

Denneson et al. (2010) conducted a retrospective medical chart review of 112 veterans who took their own lives in Oregon between 2000 and 2005 and who were treated by the VHA. They found that in the year prior to their death, 54 veterans (48%) had been seen by mental health, 71 (63%) by primary care and 62 (55%) had at least one emergency department visit. Sixty-one (54%) of these veterans had contact with the VHA in the 30 days prior to their death. Seventeen (15%) of these visits were with their primary care provider. The median number of days between last VHA contact and death was 42 days.
Only eighteen (16%) of the veterans in the study by Denneson et al. (2010) were assessed for suicidal ideation at their last visit, and 13 (72%) of those denied that they were suicidal at the time. All five veterans who did endorse suicidal ideation received follow up within 30 days of that visit. Of the chief complaints on last contact, 36 (32%) of the 112 were patient-initiated for a new concern and 68% were follow-up visits. Mood disorders (38%) and cardiovascular concerns (38%) were the most common complaints, while 45% were assessed for depression, PTSD or substance abuse.

Several limitations are evident with this study by Denneson et al. (2010). First, this is a single state VA system and the veterans were all seen at the same VHA facility which makes generalizing the results less acceptable. Second, the authors note the difficulties with chart review in that it is limited to the accuracy of the individual clinician. Finally, the VHA system has changed considerably with respect to suicide prevention since 2005 and the delay in publishing this study makes it difficult to relate to current practice at the VHA.

Despite the limitations of this study, there is utility in that the study demonstrates difficulties in screening for suicide at the primary care level. Seventy-two percent of those asked about suicidal ideation denied such thoughts. There are a number of plausible reasons including trust, fear or that they simply did not have suicidal thoughts at that time. Further, the majority of these patients (84%) were not asked about suicidal ideation. There are a few explanations for this. For instance, the patient may not have given the clinician cause to ask or possibly due to the clinician’s comfort level in asking these types of questions.
In another study, Smith et al. (2013) examined the quality of suicide risk assessment the VHA provided to veterans with depression who died by suicide. They conducted a nested case study of veterans who died by suicide across the U.S. between 1999 and 2004. These cases were matched with demographically similar patients at the VHA who were alive at the date of death for the suicide victim. Comparisons were made regarding the rate of suicide assessment and the answers to the assessment questions.

The study examined both patients seen at the mental health and primary care clinics in the year prior to their death. For this project, only data relative to the primary care visits are presented. Only patients with a diagnosis of depression were included in the study and additional mental health disorders such as bipolar or schizophrenia were excluded. The inclusion criteria (diagnosis of depression and died by suicide) were met by 244 veterans. Only 69 of those were seen in primary care only before their death. Of these 69 veterans, 24 (34.8%) were assessed for suicide in their final visit. Only 8 (33.3%) of the 24 veterans who were assessed endorsed suicidal thoughts during that assessment. The same rates of suicide assessment were found in the matched sample of those who did not die by suicide.

The limitations for this study are similar to those discussed above in that relying on clinician documentation creates error that is dependent on the thoroughness of the clinician. Similar to the last study, these data were more than nine years old at the time of publication and may not be applicable to the practice currently in place at the VHA. This study further emphasizes the difficulty in assessing for suicide at the primary care level and also demonstrates the challenges of assessing for acute suicidal intent as a means of suicide risk reduction.
Conclusion

Suicide is a serious concern for our nation’s veterans (Katz et al., 2012). Recent data suggest that the overall trend is getting worse. Those veterans who utilize VHA services appear to be at an even higher risk for suicide compared to those who do not receive services there. Recent studies (Denneson et al., 2010; Smith et al., 2013) indicate that even when veterans are screened and deny suicidal ideation they may still be at high risk for suicide. One problem, it would seem, is that the existing system for screening veterans at the VHA for elevated risk for suicidal thoughts may not accurately capture those at risk. The question appears to be: is there a tool available which can screen and identify veterans who may be at elevated risk for suicidal ideation? And, if such a tool exists can it be implemented into a primary care practice to screen for suicide risk at both the VHA and non-VHA settings?

Risk Factors/Intervention

There are numerous distal risk factors which have been associated with suicide. Van Orden et al. (2010) list more than 20 broad risk factors with evidence of their association with suicide. The IPTS posits that all of these risk factors are associated with either perceived burdensomeness or thwarted belongingness. Table 1 lists the risk factors that are associated with each of the two interpersonal constructs.

Reviewing all of these risk factors is beyond the scope of this project. However, one of these broad categories is mental health disorders which are posited to influence both of these more proximal risk factors of thwarted belongingness and perceived burdensomeness. Mental health illnesses include many different disorders but two of
them are depression and PTSD. These two risk factors are also the main target of screening for suicide at the VHA (Congressional Research Service, 2013).

The association between these risk factors and suicide is important. However, for the purpose of this project they will be discussed in relation to perceived burdensomeness and thwarted belongingness. In order for these two risk factors to be useful they must be able to predict suicidal ideation beyond the contribution of both depression and PTSD.

Table 1

*Risk Factors for Suicide Associated with Perceived Burdensomeness and Thwarted Belongingness* (Van Orden et al., 2010)

<table>
<thead>
<tr>
<th>Perceived Burdensomeness</th>
<th>Thwarted Belongingness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental Illness Liability</td>
<td>Mental Illness Loneliness</td>
</tr>
<tr>
<td>Self-Hate</td>
<td>Absence of Reciprocal Care</td>
</tr>
<tr>
<td>Distress from Homelessness</td>
<td>Social Withdrawal</td>
</tr>
<tr>
<td>Distress from Incarceration</td>
<td>Single Jail Cell</td>
</tr>
<tr>
<td>Distress from Unemployment</td>
<td>Domestic Violence</td>
</tr>
<tr>
<td>Distress from Physical Illness</td>
<td>Loss Through Death/Divorce</td>
</tr>
<tr>
<td>Expendability, Unwanted</td>
<td>Childhood Abuse</td>
</tr>
<tr>
<td>Belief One is a Burden</td>
<td>Family Conflict</td>
</tr>
<tr>
<td>Low Self Esteem</td>
<td>Self-Report Loneliness</td>
</tr>
<tr>
<td>Self-Blame, Shame</td>
<td>Seasonal Variations</td>
</tr>
<tr>
<td>Agitation</td>
<td>Living Alone, Few Social Supports</td>
</tr>
</tbody>
</table>
Perceived Burdensomeness as a Predictor of Suicide Ideation

Several studies have examined the relationship between PB and Suicidal Ideation (SI). The studies reviewed here are all cross sectional, correlational and predictive in design. They all use regression analysis in order to examine PB in relation to other known predictors of SI such as depression and hopelessness. These studies have been conducted on a variety of samples including older adults, patients with chronic pain, Spanish speaking women and adult psychiatric patients.

Van Orden, Lynam, Hollar, and Joiner (2006) examined this relationship using 343 (187 female; 156 male) adult psychology clinic outpatients, whose ages ranged from 18 to 62 years. Previous suicide attempts and hopelessness were measured by single item tools. PB was measured by a single question asking participants to rate how their family would react to their death. The Beck Scale for Suicide Ideation (BSSI) and the Beck Depression Inventory (BDI) were also completed. Further, personality disorder status was assessed by psychiatrist supervised therapists.

Twenty subjects (6%) reported two or more suicide attempts and 42 (12%) reported one previous suicide attempt. All other participants (n = 281, 83%) had no previous attempts. Forty-one percent (n =140) reported some level of current suicidality with scores greater than zero on the BSSI. The sample had a rate of PB of 5.5% as measured on the single item question. Perceived burdensomeness was correlated with past suicide attempts (r = .21, p < .05) and suicidality score (r = .32, p < .05). Hopelessness was also correlated with suicide attempts (r = .20, p < .05) and suicidality (r = .46, p < .05).
The researchers conducted a hierarchical multiple regression analysis to test if PB was a predictor of SI beyond the contribution of depression and hopelessness. The initial model containing age, gender and personality disorder status as covariates did not significantly predict SI ($F(3, 339) = 2.38, p = .07$). In the second equation, depression was added to the covariates of the first model. This second model significantly predicted SI ($F(4, 338) = 42.13, p < .001$) and accounted for 33% of the variance in SI. Higher levels of depression significantly predicted higher levels of SI ($sr = .56, t(338) = 12.57, p < .001$). Hopelessness was added in the third model that significantly predicted SI ($F(5, 337) = 42.31, p < .001$) and accounted for an additional 6% (39% total) of the variance in SI above the contribution of depression. Higher levels of hopelessness significantly predicted higher levels of SI ($sr = .23, t(338) = 5.39, p < .001$).

Perceived burdensomeness was added to the equation in the final step. This model significantly predicted SI ($F(6, 336) = 39.37, p < .001$). An additional 3% (42% total) of the variance in SI was accounted for by this model. Higher levels of PB significantly predicted higher levels of SI ($sr = .17, t(338) = 3.94, p < .001$). This suggests PB adds to the prediction of suicidal symptoms above and beyond the contribution of the two relatively powerful risk factors of depression and hopelessness.

The authors conducted another hierarchical regression analysis to determine if PB was predictive of the number of past suicide attempts. The researchers hypothesized that PB was predictive of past suicide attempts above and beyond the contribution of hopelessness and depression. Also similar to the first regression equation, the initial model containing age, gender and personality disorder status did not significantly predict suicide attempt status ($F(3, 339) = 1.06, p = .37$).
Step 2 added depression to the model and significantly predicted greater number of previous suicide attempts \((F(4, 338) = 6.00, p < .001)\) and accounted for 7% of the variance in suicide attempt status. Higher levels of depression significantly predicted greater numbers of past suicide attempts \((sr = .24, t(338) = 4.54, p < .001)\). In the third step hopelessness was added and significantly predicted suicide attempt status \((F(5, 337) = 5.61, p < .001)\) but only accounted for an additional 1% of the variance in suicide attempt status. Higher levels of hopelessness did not significantly predict higher numbers of suicide attempts in this model.

The final analysis added PB to the model and was significantly predictive of suicide attempt status \((F(6, 336) = 6.02, p < .001)\) and accounted for an additional 3% \((\text{total } R^2 = .10)\) of the variance in suicide attempt status. Higher levels of PB significantly predicted higher numbers of suicide attempts \((sr = .14, t(338) = 2.74, p < .01)\), suggesting that PB is a significant predictor of past suicide attempts above and beyond depression and hopelessness. These results are not in line with the IPTS that holds both PB and TB are transient states and if present should predict current SI. Despite the fact that past suicide attempts are a risk factor for suicide, people with a history of past suicide attempts should not have PB present unless they are currently having SI according to the IPTS. These results may be explained by either PB not being transient as proposed or the fact that suicide ideation was significantly correlated with past attempts in this clinical sample \((r = .51, p < .05)\). This suggests at least a portion of those with a history of suicide attempts in this sample may have had current SI.

Limitations to this study include the use of self-rating measures for the tools used. Additionally the use of a single item measure for PB and hopelessness may be less
sensitive than a longer and more detailed tool to measure these constructs. For screening purposes, the association with PB and suicidal symptoms shows promise in that PB was predictive of suicidal symptoms above the contribution of depression and hopelessness.

Cukrowicz, Cheavens, Van Orden, Ragain, and Cook (2011) further tested the idea that PB is a predictor of suicide above the contribution of other known risk factors for suicide. In order to do this the authors conducted two separate studies. In the first study, 57 participants aged 55 and older ($M = 74.14$, $SD = 7.51$) were recruited from a registry of willing research participants from the Duke University Center for Aging and Human Development. The sample consisted of 32 women and 25 men who filled out several questionnaires. The variables of interest were PB as measured by the INQ-12, suicidal ideation as measured by the Geriatric Suicide Ideation Scale – Suicide Ideation Subscale (GSSI-SI), depression measured by the Center for Epidemiologic Studies – Depression Scale (CES-D) and loneliness as measured by the Revised UCLA Loneliness Scale.

Suicide ideation was correlated with depression ($r = .61$, $p < .001$), loneliness ($r = .50$, $p < .001$) and burdensomeness ($r = .72$, $p < .001$). The distribution of the GSIS-SI data had significant overdispersion ($M = 2.65$ [SE = .60], $\sigma^2 = 19.7$, $K = 7.65$ [SE = .63], range = 0 to 21). Because of this, the authors chose to use a negative binomial regression for analysis of the data. The authors note this is the best test when using over-dispersed data as it accounts for unobserved variance between cases producing a more accurate significance test of the effects of the predictor variable.

The first regression analysis, using SI as measured by the GSIS-SI as the criterion variable, included age, gender (male), depression and loneliness. This model was
significant ($\chi^2 = 35.02, df = 4, p < .001$) suggesting good model fit. Gender was significantly associated with SI in this model (Wald $\chi^2 = 8.40, p = .004$). The exponentiated coefficient for the male gender was 2.94. This means the score on the GSIS-SI for men was 2.94 times greater than those for women. Loneliness was also significantly associated with SI in this model (Wald $\chi^2 = 3.97, p = .042$) with an exponentiated coefficient of 1.06, meaning scores on the GSIS-SI were 1.06 times higher for people with high loneliness.

In the second regression analysis, burdensomeness was added to the model and was significant ($\chi^2 = 42.78, df = 5, p < .001$). Burdensomeness was significantly associated with SI with all other variables held constant (Wald $\chi^2 = 7.21, p = .007$). The exponentiated coefficient for PB was 1.11, this means that a one-unit increase in PB was associated with a 1.11 greater GSIS-SI score. The authors suggest these results support PB as unique and associated with SI.

This first study by (Cukrowicz et al., 2011) had several limitations including a small sample of highly educated, mostly healthy older adults who repeatedly volunteered for research participation. For this reason the second study was conducted using the same measures as the first study with the addition of hopelessness as measured by the Beck Hopelessness Scale (BHS) and general physical and mental health as measured by the Medical Outcomes Study Short Form General Health Survey - 8 (SF-8).

The study participants included 105 subjects with a mean age of 70.89 (SD = 7.63) recruited from a primary care setting including 78 women and 27 men. Similar to the first study, SI was significantly correlated with depression ($r = .58, p < .001$), loneliness ($r = .63, p < .001$) and burdensomeness ($r = .67, p < .001$). SI was also
significantly correlated with hopelessness ($r = .63, p < .001$) and perceptions of health ($r = -.46, p < .001$) that were added for this study.

The authors constructed a binomial regression analysis as the distribution of the SI variable again showed significant over-dispersion ($M = 2.90 \ [SE = .49]$, $\sigma^2 = 23.76$, $K = 8.59 \ [SE = .48]$, range = 0 to 25). The initial model including all variables except burdensomeness was significant ($\chi^2 = 72.06$, $df = 6$, $p < .001$) suggesting good model fit. Loneliness (Wald $\chi^2 11.98$, $p = .001$) was the only variable significantly associated with SI in this model. The exponentiated coefficient for loneliness was 1.07.

The second negative binomial regression analysis adding PB to the model was significantly predictive of SI ($\chi^2 = 76.29$, $df = 7$, $p < .001$). Both PB (Wald $\chi^2 4.15$, $p = .042$) and Loneliness (Wald $\chi^2 9.71$, $p = .002$) were significantly associated with SI. The exponentiated coefficient for loneliness was 1.08 and the coefficient for PB was 1.06. The authors state these results provide support for the use of PB as an indicator of SI in older adults. In addition, loneliness (a sub-construct of thwarted belongingness) remained a significant predictor of SI over and above the contribution of depression and hopelessness. This adds support for thwarted belongingness as a predictor of SI. These results further indicate that PB adds significantly to the variance in SI above known risk factors for suicide (depression and hopelessness).

Both studies have several limitations including a largely female sample as well as the use of self-reporting measures in a cross sectional design. Also both samples were groups that were not necessarily at high risk for suicide. The rate and intensity of SI is not reported in either sample nor is the absolute correlation between PB and SI in terms of number of subjects experiencing both.
Kanzler, Bryan, McGreary, and Morrow (2012) further examined if PB was a predictor of SI, beyond the effects of depression. In addition to depression, the authors also included chronic pain which is a known risk factor for suicide. The participants included 103 patients referred for pain-related health complaints to a psychology clinic at a large military health center. All participants were either active duty military, retired or their dependents (female 65.2%, Caucasian 71.7%, mean age 41.9).

Participants completed several self-report assessments. Depression and SI were both assessed with the BDI-II; SI was assessed with item 9 which assesses thoughts of killing one’s self. Pain severity was measured with the Multidimensional Pain Inventory (MPI). A single item from Rudd’s Suicide Intensity Scale (RSIS) was used to assess for PB. This item asks the participant to rate the statement “It would be better for everyone involved if I were to die.” This item is similar to item #1 on the INQ -10 that asks “These days the people in my life would be better off if I were gone.”

Suicidal ideation was present in 15% of the sample (n=15) while PB was present in 14% (n=14) of the sample. Seventy-three percent (n=11) of those who had SI also were experiencing PB. SI was significantly correlated with depression (r = .58, p < .01) and PB (r = .79, p < .01).

In order to determine if PB was predictive of SI above and beyond the contributions of both depression and chronic pain the authors constructed a logistic regression analysis, coding the dependent variable (SI) as 1 for the presence of SI or 2 for the absence of SI. The initial model containing age, gender, race, marital status and depression was statistically significant ($\chi^2 (5) = 41.181, \text{-2LL = 43.361, } p < .001, \text{Nagelkerke } R^2 = 0.592$). Depression ($\beta = 0.230, p < .001, \text{OR = 1.258 [1.117 to 1.417]}$)
and female gender ($\beta = -1.707$, $p = .051$, OR $= 0.181$ [0.033 to 1.009]) were the only significant predictors of SI. This model accounted for 59.2% of the variance in SI.

Perceived burdensomeness was added in the second analysis. This model was also significant ($\chi^2 (6) = 57.230$, $-2LL = 27.312$, $p < .001$, Nagelkerke $R^2 = 0.764$) with PB being the sole significant predictor of SI ($\beta = 3.068$, $p = .004$, OR $= 21.503$, [2.680 to 172.547]). This model accounted for 76.4% of the variance in SI. The odds ratio of 21.5 means that those experiencing PB were 21.5 times more likely to experience SI than those who did not have PB. Results remained significant even when accounting for the effects of pain severity.

These results are supportive of the role of PB in predicting SI. However, the study has several limitations including the cross sectional design. Additionally, the measure for PB was only a single item measure and may not be as powerful in measuring PB with a multiple item tool. Since this was a military sample, SI may have been underreported due to stigma regarding mental illness and weakness in relation to suicide in the military. It is however informative that PB was such a strong predictor given these limitations.

The previous studies have demonstrated the ability of PB to predict SI above other known risk factors. Garza and Pettit (2010) conducted a study to measure if responsibility for family (familism) will act as a protective factor and negatively correlate with suicidal ideation. Additionally, the authors sought to measure if PB positively correlated to SI and to measure if familism and PB interacted to predict SI. The study included 61 outpatient women at an urban community health center who were monolingual Spanish-speaking.
Participants completed the Spanish versions of several self-assessment questionnaires. Depression was measured by the BDI-II, SI was measured by the MSSI and burdensomeness was measured by the INQ-18. Familism was measured by the Attitudinal Familism Scale (AFS) which has 18 items related to familial connectedness and familial honor. The Reasons for Living Inventory (RFL-I) is a 48 item questionnaire that measures potential reasons for not committing suicide. This study focused on the Responsibility to Family (RTF) subscale of the RFL-I which is relevant to the construct of familism.

A larger than expected portion of the sample (n=19, 31.1%) had SI with scores on the MSSI greater than 0. Approximately a third of the sample (n=17) had scores on the Beck Depression Inventory-II that indicated mild depression. Another third had scores indicating moderate to severe depression. SI positively correlated with PB (r = .56, p < .01) and depression (r = .40, p < .05). Depression and PB were also significantly correlated (r = .51, p < .01). Scores on the attitudinal familism scale and the responsibility to family subscale were not significantly correlated with SI.

Using a logistic regression, with SI as the dependent variable, the initial analysis found that depression significantly correlated with SI (β = 0.09, OR = 1.09, 95% CI = 1.03 – 1.16, p < .01) and the second analysis indicated that PB was a significant predictor of SI (β = 0.09, OR = 1.10, 95% CI = 1.02 – 1.19, p = .02). The OR of 1.10 indicates that as PB scores increased by 1 unit, the odds of SI increased 10%. The authors note that the odds for SI in women who scored one standard deviation above the mean for perceived burdensomeness were 96% greater than those women who scored at the mean of PB. In the final analysis, PB and familism did not show a significant interaction.
Limitations include self-assessment measures in a cross sectional design. Since the participants were Spanish-speaking women only, these results are less generalizable to the population at large than many studies. While all the other measures had previously been translated into Spanish and tested, this was the first use of a Spanish version of the INQ in research. The translation was not done through a professional translation service which potentially limits its reliability and validity in this group. The authors do note that the internal consistency of the INQ for this study was lower ($\alpha = .79$) compared with previous studies using the English version ($\alpha = .89$). They suggest a possible reason may be related to semantic/language differences. Despite these limitations, this study does show a strong correlation between PB and SI, even when controlling for other risk factors, in particular depression. This study adds to the empirical evidence for the use of PB measured with the INQ in assessing for SI.

These studies all demonstrate that PB is a predictor of SI above and beyond the effects of other well known risk factors. This is supportive of the use of a tool to measure PB in screening patients for suicide risk. The fact that PB predicted SI in multiple populations further supports its usefulness as a screening tool in primary care.

**Perceived Burdensomeness as a Risk Factor Mediator**

The previous studies have all demonstrated the ability of perceived burdensomeness to predict SI above and beyond the contribution of other known risk factors such as depression and hopelessness. Jahn, Cukrowicz, Linton, and Prabhu (2011) designed a study to measure whether PB was a mediator between depression and SI. The authors hypothesized that PB was a more proximal risk factor for SI than depression.
Participants included 106 adults (aged 60-93) recruited from a family medicine clinic. The participants completed the CES-D to measure depression. PB was measured by 2 items on the Suicide Cognition Scale (SCS). These two items ask “I am a burden to my family” and “the world would be better off without me.” Hopelessness was measured by the Beck Hopelessness scale (BHS). Current suicidal ideation was measured by both the Geriatric Suicide Ideation Scale (GSIS) as well as the Modified Scale for Suicide Ideation (MSSI), which is a clinician administered interview.

In bivariate correlations, SI was significantly correlated with hopelessness (r = .64, p < .01), depression (r = .61, p < .01) and PB (r = .80, p < .01). In order to determine if PB mediates the relationship between depression and SI, a series of multiple regression analyses was conducted. In each of these analyses hopelessness and gender were controlled in the initial step.

In the first regression analysis the predictor (depression) was regressed onto the mediator (PB). The initial model of this regression containing gender and hopelessness was a significant predictor of PB ($F(2, 94) = 26.48, p < .001$) and accounted for 36% of the variance in PB. The second model that added depression to the model was also significantly predictive of PB ($F(3, 93) = 29.87, p < .001$) and accounted for 49% of the variance in PB. Depression was a significant predictor of PB ($\beta = 0.051, p < .001$) in this model.

The second regression analysis was conducted to determine if depression (predictor) was a significant predictor of suicidal ideation (criterion). The initial model including gender and hopelessness was significant ($F(2, 94) = 32.73, p < .001$)
accounting for 41% of the variance in SI. This model served as the initial model for the remaining three regression analyses.

Depression was first added to the above model. This analysis was significantly predictive of SI ($F(3, 93) = 33.33, p < .001$) accounting for 52% of the variance in SI. Depression was a significant predictor of SI in this model ($\beta = 0.227, p < .001$).

In the next step depression was removed and PB was added to the model. This model was significant ($F(3, 93) = 69.26, p < .001$) and accounted for 41% of the variance in SI. Perceived burdensomeness was a significant predictor of SI ($\beta = 3.247, p < .001$).

The final model containing gender, hopelessness, depression and perceived burdensomeness was a significant predictor of SI ($F(4, 94) = 53.85, p < .001$) and accounted for 70% of the variance in SI. With all the variables included in the model PB was a significant predictor of SI ($\beta = 2.938, p < .001$). The effect of depression on SI was non-significant ($\beta = 0.077, p = .084$). In this model 68.3% of the effect of depression on SI was mediated by PB.

The limitations for this study include the use of self-reporting assessment tools as well as the cross-sectional design. Additionally, the SCS uses only two items to assess for PB and may be less sensitive to variations in PB. Further, this sample of older adults may not be generalizable. Despite these limitations this study does demonstrate the utility of PB as a target for screening for SI in older adults.

**Thwarted Belongingness as a Mediator of Suicide Ideation**

Van Orden, Witte, Gordon, Bender, and Joiner (2008) examined if SI varied across semesters in undergraduate students and what role, if any, belongingness played in this variation. The total number of participants was 309 undergraduate students (female
73%, mean age 19 years) enrolled in an introductory psychology class. Three sub-groups were created based on the semester in which they were enrolled: (a) spring (n = 100), (b) summer (n = 62), and (c) fall (n = 147). All students completed two self-assessment measures. Belongingness was measured by the INQ-TB subscale (10 items) and SI was measured by the BSSI.

The authors constructed a series of regression equations to answer the three hypotheses. The first hypothesis was that SI would vary across semesters and specifically that the highest rates would occur during the summer. This was confirmed with rates for SI highest in the summer (M = 1.5, SD = 3.54) followed by fall (M = 0.66, SD = 2.31) and spring (M = 0.57, SD = 2.32). The scores on the BSSI were significantly higher in the summer versus the spring (β = -0.93, t(306) = -2.21, p = .03) and fall (β = -0.84, t(306) = -2.13, p = .034). These results confirm that SI was significantly higher in the summer than both the spring and fall for college aged students.

The second hypothesis was that belongingness would vary across semesters and specifically that rates of belongingness would be lowest in the summer. This was also confirmed with rates of belongingness lowest in the summer (M = 5.33, SD = 1.26) followed by the fall (M = 5.48, SD = 1.13) and spring (M = 5.75, SD = 1.00). The scores on the INQ were significantly different between the summer and spring semesters (β = -0.43, t(306) = 2.36, p = .019) indicating lower belongingness in the summer compared to the spring. Scores were not significantly different between the summer and fall though the difference was in the predicted direction (β = 0.16, p = .362).

The final hypothesis was that belongingness would mediate the relationship between semester and SI. A series of regression analyses were constructed with season
(spring and summer as predictors and summer as the reference group) and belongingness as predictors and SI as the dependent variable. Only belongingness significantly predicted SI ($\beta = -0.79$, $t(305) = -6.35$, $p = < .001$). In the presence of belongingness (mediator), the semester’s magnitude was non-significant ($\beta = -0.59$, $t(305) = -1.48$, $p = .140$). This indicates that belongingness significantly mediated the relationship between semester (season) and SI.

The results of this study are an important addition for the use of a measure of TB as a screening tool for suicide risk. The study is limited by the use of young undergraduate students that make generalization difficult. Additionally, no other variables such as depression and hopelessness were included that could confound the relationship between TB and SI. This study does add to the evidence for the IPTS and ability to predict SI through the use of the INQ.

**Perceived Burdensomeness and Thwarted Belongingness as Mediators of Suicide Ideation**

Davidson, Wingate, Grant, Judah, and Mills (2011) examined the mediating effects of perceived burdensomeness and thwarted belongingness on suicidal ideation. The aim of this study was to determine how depression and social anxiety influence TB and PB. Additionally, the authors hypothesized that depression, social anxiety, PB and TB would positively predict SI. The participants of the study included 269 college students (192 female, 77 male, age 18 to 45, mean age of 19.56) recruited from a large Midwestern university. The subjects completed several online questionnaires.

A demographic questionnaire measured age, sex, ethnicity and education. PB and TB were measured using the INQ -18. SI was measured with the Hopelessness
Depressive Symptom Questionnaire – Suicidality Subscale (HDSQ-SS). Fears related to social interaction were measured through the use of the Social Interaction Anxiety Scale (SIAS). General anxiety symptoms were measured with the Zung Self-Rating Anxiety Scale (SAS). Depression was measured by the CES-D.

Suicidal ideation was significantly correlated in bivariate analysis with depression ($r = .32, p < .001$), social anxiety ($r = .25, p < .001$), TB ($r = .31, p < .001$), PB ($r = .38, p < .001$) and the interaction of PB and TB ($r = 0.34, p < .001$). The authors conducted two hierarchal linear regressions to answer if depression and social anxiety were predictive of TB and PB.

In the initial analysis gender, age and income were entered into the model. Gender was significantly predictive of both TB ($\beta = 0.21, p = .001$) and PB ($\beta = 0.17, p = .006$) such that males tended to score higher on these measures than females. Income was also significantly predictive of both TB ($\beta = -0.23, p < .001$) and PB ($\beta = -0.16, p = .010$) such that those with lower incomes tended to score higher on these measures.

In the second analysis depression and social anxiety were added to the model. Depression was significantly predictive of both TB ($\beta = 0.44, pr^2 = .01, p < .001$) and PB ($\beta = 0.49, pr^2 = .21, p < .001$). Social anxiety was significantly predictive of TB ($\beta = 0.24, pr^2 = .07, p < .001$) but not of PB.

The authors conducted Structured Equation Modeling (SEM) in order to determine if an indirect path through TB and PB exists between depression, social anxiety and SI. The authors hypothesized direct paths from depression and anxiety to both TB and PB as well as SI. Significant paths were found from depression to PB and TB but not to SI. Social anxiety was predictive of TB but not PB or SI. Finally PB was
the sole predictor of SI. Fit indices suggested good model fit ($\chi^2(1) = 3.56$, $p = .06$, CFI = .99, TLI = .94, RMSEA = .10). The final model predicted 17% of the variance in SI.

This model indicates that, similar to the results obtained by Jahn et al. (2011), PB, but not TB, was a mediator of depression’s effect on SI. The authors posit that TB’s lack of SI predictability when measured with PB may be due to TB not being a strong predictor of SI overall or may be due to a lack of TB among college students. The authors state that college students generally have multiple opportunities to belong to a group or groups through the course of the college. If this is the case, it may be that college students feel a higher sense of burden with regard to finances or living arrangements than they do of not belonging to a particular group.

Limitations with this study include the use of a sample that generally exhibits lower levels of SI than some other populations which limits the generalizability of the findings. The authors also note this study did not account for determinates of either depression or social anxiety. This limitation does not diminish the findings in relation to this project. The findings that PB is not only a strong predictor of SI, but a mediator between depression and SI, are important. These finding further add to body of evidence in support of PB as an important screening item for suicide risk.

Hill and Pettit (2012) hypothesized that gay, lesbian and bisexual (GLB) students would experience greater PB and TB and thus SI as a result of their perceived or anticipated rejection based on sexual orientation. They further hypothesized that the interpersonal constructs would mediate the relationship between acceptance of sexual orientation and SI.
The participants were 198 college students recruited from an undergraduate psychology pool (n = 160) and through the use of campus flyers (n = 38). The authors attempted to oversample GLB students through the use of flyers distributed to GLB student organizations on campus. Women made up 59.6% of the subjects, who ranged in age from 18 to 46 with a mean age of 21.28. One hundred forty-eight participants identified themselves as heterosexual. The remaining 50 participants self-identified as either gay/lesbian (n = 14), bisexual (n = 26) and unsure/other (n = 10).

The subjects answered a series of questionnaires. This included sexual orientation that was measured by two questions: (a) self-identifying of sexual orientation and (b) rating of attractiveness to either men or women based on a 7 point Likert scale. Additionally, SI was measured by the Adult Suicidal Ideation Questionnaire (ASIQ) which is a 25 question self-report measure. PB and TB were measured by the INQ-12. Perceived acceptance of sexual orientation was measured by the Acceptance-Rejection Scale (ARS), which was designed to measure perceived responses when others learned of their sexual orientation. Finally, depressive symptoms were measured with the CES-D.

Mean levels of SI were significantly higher for GLB students (M = 19.66, SD = 18.60) compared to heterosexual students (M = 7.43, SD = 9.75, p < .001). GLB students also had significantly higher rates of PB (M = 13.98, SD = 7.23, p = .001) and acceptance of sexual orientation (M = 2.62, SD = 1.53, p < .001) compared to heterosexual students levels of PB (M = 10.76, SD = 5.11) and acceptance of sexual orientation (M = 0.30, SD = 0.88). Levels of TB and depression were not significantly different between the two groups.
In GLB students, suicidal ideation was significantly correlated to depression \( (r = .49, p < .001) \), PB \( (r = .60, p < .001) \), TB \( (r = .55, p < .001) \) and acceptance of sexual orientation \( (r = .49, p < .001) \). For heterosexual students, SI was also significantly correlated with depression \( (r = .56, p < .001) \), PB \( (r = .56, p < .001) \) and TB \( (r = .42, p < .001) \) but, as expected, not for acceptance of sexual orientation.

In order to determine if an indirect path exists between sexual orientation and SI the author’s performed a multiple indirect effects analysis. Sexual orientation was set as the independent variable with PB and TB as mediating variables and SI as the dependent variable. Analyses were run with and without depression as a covariate. The authors note no significant difference between the models. They presented the results of the model with depression. This model was a significant predictor of SI \( (F(6,184) = 28.25, p < .001) \).

The results indicated sexual orientation was a significant predictor of PB \( (\beta = 0.41, p < .001) \) and SI \( (\beta = 0.62, p < .001) \). PB was also a significant predictor of SI \( (\beta = 0.39, p < .001) \). Further, sexual orientation demonstrated an indirect effect on SI through PB \( (0.16 (2.32), 95\% \ CI 0.73-5.53) \). However, sexual orientation continued to have a direct effect on SI \( (\beta = 0.62, p < .001) \) suggesting PB accounted for a portion, but not all, of the association between sexual orientation and SI. Thwarted belongingness did not significantly predict SI either directly or indirectly in this model. Sexual orientation was also not significantly predictive of TB.

The major limitation of this study involves the use of GLB students which may not be generalizable to other populations. However the correlation between PB and SI in this population adds to the evidence for the use of these constructs in screening for
suicide risk. Further, PB again demonstrated a mediating effect between known suicide risk factors and SI. That TB demonstrated no mediating effect in the presence of PB is of interest. The authors note that TB was not significantly correlated with sexual orientation in bivariate analysis. Also, they hypothesize that college students may be more inclined to having their belongingness needs met through their university experience.

Bryan, Hernandez, Allison, and Clemans (2013) used two samples of military personnel to explore the relationship between combat exposure and suicide risk. The samples were different in that the first were combat exposed troops not seeking mental health care. The second sample of combat exposed troops was actively seeking mental health care. The authors hypothesized that combat exposure would have a direct effect on suicide risk. In addition, indirect paths between combat exposure and suicide risk were hypothesized through depression, PTSD, PB, TB and fearlessness about death (acquired capability). The authors used structural equation modeling to explore this relationship.

The hypothesized model is shown in Figure 1.
The first study sample included 348 (312 male, 36 female, mean age 24.5 years) active duty Air Force personnel deployed to a base in Iraq. The participants completed several self-assessment questionnaires including the INQ-10 (PB and TB), the Acquired Capability for Suicide Scale (ACSS) for AC, the SBQ-R (suicide risk), the Behavioral Health Measure 20 (BHM, depression), and the PCL-M (PTSD). Combat exposure was measured with the combat experience scale, a 23 item questionnaire measuring common events that occur during deployment to a combat zone. The questionnaire asks yes and no questions regarding items such as being ambushed, shooting and seeing dead personnel.

The group had low levels of suicide risk (6.6%) along with low levels of depression ($M = 0.35, SD = 0.36$) and PTSD ($M = 19.30, SD = 4.41$). Suicide risk was significantly correlated with PTSD ($r = .12, p = .025$), depression ($r = .24, p < .001$) and TB ($r = .18, p = .001$). Suicide risk was negatively correlated with AC ($r = -.12, p = .025$).
Combat exposure correlated with PTSD ($r = .40, p < .001$) and AC ($r = .22, p < .001$) but was not significantly correlated with suicide risk.

The authors conducted structural equation modeling to determine if significant paths exist from combat exposure to suicide risk. The initial model (Figure 3) demonstrated good fit ($\chi^2 (5) = 7.314, p = .198; \text{SRMR} = .027; \text{RMSEA} = .037; \text{CFI} = .990$). The final trimmed and simplified model demonstrated very good fit ($\chi^2 (12) = 18.801, p = .093; \text{SRMR} = .044; \text{RMSEA} = .044; \text{CFI} = .971$). This model is displayed in figure 2.

![Final Structural Model for Non-Clinical Military Sample](image)

*Figure 2. Final Structural Model for Non-Clinical Military Sample. Adapted from “Combat Exposure and Suicide Risk in Two Samples of Military Personnel,” by C.J. Bryan, A.M. Hernandez, S. Allison, and T. Clemans, 2013, *Journal of Clinical Psychology*, 69, p. 70. Copyright 2012 by Wiley Periodicals Inc. Used with permission (see appendix F).*

Combat experience was significantly associated with severity of PTSD and acquired capability. Combat experience also had an indirect effect on depression through PTSD. Only depression was predictive of suicide risk in this model. Depression was also significantly associated with both TB and PB. These results are interesting given the
other studies showing a strong link between PB and suicidal ideation. The results are not entirely unexpected as the authors used the SBQ-R as the measure of suicide risk. The SBQ-R measures past suicidal behaviors and not current suicidal ideation. According to the IPTS, if the constructs of TB and PB are present then SI should also be present. Since this was a non-clinical sample of young healthy military personnel with low levels of suicide risk, PTSD and depression, it is likely any level of current SI in this group was also low. Current SI was not measured in this study and thus a correlation between SI and suicide risk could not be made.

The authors conducted a second study using a clinical sample of 219 (201 male, 18 female, mean age 27.88 years) military personnel deployed to Iraq as part of Operation Iraqi Freedom. These personnel were undergoing psychological treatment and/or neuropsychological evaluation for suspected Traumatic Brain Injury (TBI). The same measures were used in this study as in the previous study with the participants completing the self-assessments as part of the intake process.

In this sample, 22.4% reported some level of suicide risk. The sample also reported elevated levels of depression ($M = 1.10$, $SD = 0.96$) and PTSD ($M = 30.60$, $SD = 13.87$). Depression ($r = .36$, $p < .001$), PTSD ($r = .17$, $p < .001$), TB ($r = .38$, $p < .001$) and PB ($r = .36$, $p < .001$) were all positively correlated with suicide risk.

Similar to the first study structural equation modeling was used to determine if a path exists between combat exposure and suicide risk. The initial full model (Figure 1) demonstrated good fit ($\chi^2 (3) = 6.532$, $p = .088$; SRMSR = .025; RMSEA = .038; CFI = .997), and the final trimmed and simplified model (Figure 3) demonstrated very good fit ($\chi^2 (12) = 13.548$, $p = .331$; SRMSR = .031; RMSEA = .024; CFI = .997).
Combat experience was again associated with PTSD severity and acquired capability in this model. In contrast to the results of the first study, only TB ($\beta = 0.304, p < 0.001$) and PB ($\beta = 0.157, p < 0.030$) were associated with suicide risk. Depression demonstrated a link with suicide risk that was mediated by PB and TB but did not display a direct link with suicide risk. PTSD was correlated with depression but not with TB or PB. Combat exposure was directly correlated with PTSD severity and AC as well as indirectly with depression through PTSD. Combat exposure had no direct correlation with TB, PB or suicide risk.

This study is interesting in that it used the same tools, including the SBQ-R, as measurements. The results of this study are more consistent with the finding of other studies in that PB and TB were associated with suicide risk, and depression was mediated by these two regarding this risk. As noted, the SBQ-R may not be the right tool for current ideation. It may be that this group, which had much higher levels of suicide risk,
and elevated levels of depression and PTSD, had more current SI. The SBQ-R may have captured some of this current SI. It would have been interesting if the authors had specifically measured current SI so a correlation could have been made. Neither PTSD nor depression was significantly linked with suicide risk when PB and TB were measured. This again provides support for the measurement of these two risk factors at the primary care level.

This study is also interesting in that TB is a stronger predictor of SI than PB. These findings are inconsistent with previous studies that found PB to be a more robust predictor of SI. In fact, in many cases TB was found to have no significant predictability of SI when measured with PB (Davidson et al., 2011). The fact that TB was the strongest predictor of SI in a clinical sample of military personnel with relatively high suicide risk (22.4%) supports the importance of including this construct in a screening tool for suicide risk in veterans. Another important aspect of this study is the presence of TBI in a portion of the sample. It may be worthy to further examine the effects of TBI on the two interpersonal constructs.

**Perceived Burdensomeness and Thwarted Belongingness as Predictors of Suicidal Ideation**

One of the main tenets of the interpersonal theory of suicide is that PB and TB interact to predict the most severe forms of SI. Van Orden, Witte, Gordon, Bender, and Joiner (2008) sought to answer the question “who wants to die by suicide.” Participants included 309 undergraduate students who were predominately female (74%) with a mean age of 19 (range 17-51) recruited through a general psychology course. The participants
completed the INQ-12 to measure PB and TB, the BSS to measure SI and the BDI to measure depression.

Fifty-two (17%) of the sample reported some measure of SI. PB and TB were positively correlated with each other ($r = .58, p < .01$). SI was significantly correlated with both PB ($r = .50, p < .01$) and TB ($r = .35, p < .01$). In order to determine if TB, PB or their interaction was predictive of SI, the authors constructed a series of regression analyses with SI as the dependent variable.

The initial model consisting of age, gender and depression significantly predicted SI ($F(3,305) = 20.46, p < .001$). Depression was the only significant predictor in this model ($sr = 0.41, t(305) = 7.81, p < .001$). This model accounted for 17% of the variance in SI. A second analysis was constructed with the addition of PB and TB to the initial model. This model also significantly predicted SI ($F(3,303) = 21.47, p < .001$) and accounted for an additional 9% variance in SI. PB was a significant predictor of SI ($sr = 0.28, t(305) = 5.62, p < .001$) while TB was not.

In the third step of the model, the interaction between PB and TB was added and demonstrated significance in the prediction of SI ($F(6,302) = 21.06, p < .001$) and accounted for an additional 4% (30% total) of the variation in SI. The interaction of TB and PB significantly predicted SI ($sr = .18, t(302) = 3.78, p < .001$) and this interaction demonstrated that TB only becomes a significant predictor of SI at high levels of PB (90th percentile).

Montetith, Menefee, Pettit, Leopoulos, and Vincent (2013) replicated the results of Van Orden et al. (2008) in a sample of inpatient veterans. The participants were 185 veterans (96 women, 86 men, mean age 38.12 years) entering treatment for traumatic
stress disorder at a large Veterans Affairs Medical Center (VAMC). All participants had a primary diagnosis of PTSD or other anxiety or mood disorder. Participants were excluded if they were determined to be at imminent risk for suicide by verbalizing a plan. Participants completed the same questionnaires as in Van Orden et al. with the addition of the PCL (PTSD). They also completed a questionnaire regarding demographics and military experience.

SI was significantly correlated with depression ($r = .49, p < .01$), PB ($r = .53, p < .01$), TB ($r = .43, p < .01$) and PTSD ($r = .37, p < .01$). TB and PB were also significantly correlated ($r = .59, p < .01$). The authors constructed a hierarchical multiple regression analysis with SI as the dependent variable. The initial model containing gender, depression and PTSD was significantly predictive of SI ($F(5,179) = 13.76, p < .001$) accounting for 27.8% of the variance in SI. Depression ($\beta = 0.04, p < .001$) and PTSD ($\beta = -0.36, p < .05$) were significant predictors of SI. The second analysis added PB and TB to the initial model. This model was significantly predictive of SI ($F(2,177) = 14.12, p < .001$) and accounted for an additional 9.9% of the variance in SI. PB, but not TB, was a significant predictor of SI in this model ($\beta = 0.29, p < .001$).

In the final analysis, the interaction between PB and TB was added. This model was a significant predictor of SI ($F(1,176) = 4.02, p = .047$) accounting for an additional 1.4% of the variance in SI. The interaction term was a significant predictor of SI ($\beta = .08, p < .05$). Similar to the study by Van Orden et al. (2008), the authors plotted the regression lines with SI as the dependent variable. Similar to the results of Van Orden et al., the results demonstrated that TB was only predictive of SI at high levels of PB.
Joiner et al. (2009) attempted to replicate the findings of Van Orden et al. (2008) using proxy measures for PB and TB. The authors also asked the question “who wants to die by suicide.” The study used a sample of 815 individuals (n = 438 women, n = 377 men, age 19 to 26). All participants endorsed either sadness, anhedonia or both associated with major depression. This was measured through a structured interview at the time of recruitment.

PB was measured through the construct of mattering, using Rosenberg’s five item General Mattering Scale to assess the respondent’s thoughts of how others feel about them. TB was measured through the construct of family social support, using a modified and shortened version of the Provision of Social Relations Scale. This scale measures respondents’ thoughts regarding the mutual caring aspects of their family. SI and 6 month and lifetime depression data were measured using the Michigan Composite Diagnostic Interview (CIDI). The CIDI is a structured interview that rates suicidal ideation through the use of three dichotomously (0 or 1) scored items.

The number of participants who scored at least 1 on the questions related to suicide was high (n=305, 37.5%). The authors state this finding to be expected given that all participants had signs of major depression on inclusion to the study. A regression analysis was constructed using SI as the dependent variable. The initial model included 6 month and lifetime depression rates and significantly predicted SI ($F(2,812) = 82.43, p < .05$) and accounted for 17% of the variance in SI. Major depression in the last 6 months was a significant predictor of SI in this model ($pr = .36, t(812) = 8.92, p = .001$)

In the second step of the regression analysis, mattering and family support were added to the original model. This model significantly predicted SI ($F(2,810) = 17.31, p <$
accounting for an additional 3% of the variance in SI (20% total). Mattering was marginally predictive ($pr = .06, t(810) = 1.75, p < .10$) while family social support was significantly predictive ($pr = .17, t(810) = 4.77, p < .05$).

In the third and final step of the regression analysis, the interaction between mattering and family social support was added to the model and was significantly predictive of SI ($pr = .08, t(809) = 2.15, p < .05$) when all other variables had been entered. This model did not add to the variance in SI above 20%. The interaction term was a significant predictor of SI.

Similar to the study by Van Orden et al. (2008) the authors plotted the regression lines in order to examine the form of the interaction. The regression line was plotted with SI as the dependent variable as function of both mattering and family social support. The results indicated that the highest levels of SI were present when the lowest level of both mattering and social support were present.

The limitations of the study include the use of proxy measures for PB and TB. While the authors discuss the constructs similarity to each other, there is no comparison made between these measures and those obtained by the INQ. While it is feasible that these constructs are similar in nature, the possibility exists that they are not. It is however interesting to note that all the subjects exhibited symptoms of major depression. Mattering and family social supports were predictive of SI above and beyond the effects of this and other strong predictors of SI.
Thwarted Belongingness, Perceived Burdensomeness and Acquired Capability as Predictors of Suicide Risk

Along the causal pathway of suicide, the IPTS posits that a person must possess both the desire for death (TB + PB) and the capability to overcome the fear of death (AC). This concept is difficult to measure as very few people reach this stage and may only be in this stage for a short period of time. Van Orden et al. (2008) designed a study to answer the question of who is at greatest risk for suicidal behavior. This study addressed the hypothesis that those who possess both suicidal desire and AC are at the highest risk for suicide. This study however did not measure TB so the actual hypothesis was if the interaction of PB and AC would predict those at highest risk for suicide.

The participants included 153 adult clients (70 men, 83 women) from the Florida State University psychology clinic. The participants completed self-rating questionnaires including the BDI (depression), INQ (only PB measures were available in this sample) and the ACSS (AC). In addition, the ratings for suicide risk were measured through clinician interview. Fifteen percent of the sample was rated at moderate risk for suicide while 3% were rated as high risk. The remainder of the sample was low risk for suicide.

Clinician-rated risk for suicide was significantly correlated with age ($r = .30, p < .01$), depression ($r = .43, p < .01$) and PB ($r = .49, p < .01$). PB was significantly correlated with age ($r = .33, p < .01$) and depression ($r = .69, p < .01$). The authors constructed a logistic regression analysis with the clinician-rated suicide risk as the dependent variable. The initial model, which contained depression, age and gender, significantly predicted suicide risk ($F(3,149) = 14.64, p < .001$) and accounted for 23% of
the variance in suicide risk. Depression was a significant predictor of suicide risk in this model ($sr = .37, t(149) = 5.18, p < .001$).

In the second analysis, PB and AC were added to the model and significantly predicted suicide risk ($F(5,147) = 11.61, p < .001$) and added 5% to the variance of suicide risk. In this model PB was the sole significant predictor of suicide risk ($sr = .22, t(147) = 3.10, p = .002$).

In the third analysis, an interaction between PB and AC was added. This model was also significantly predictive of suicide risk ($F(6,146) = 10.79, p < .001$) and accounted for an additional 3% of the variance in suicide risk. Both PB ($sr = .19, t(146) = 2.73, p = .007$) and the PB/AC interaction ($sr = .16, t(146) = 2.26, p = .026$) were significant predictors of suicide risk.

The regression lines were plotted in order to examine the form of the interaction. Acquired capability was found to only be a significant predictor of suicide risk at high levels (90th percentile) of PB ($\beta = 0.23, t(146) = 2.61, p = .010$). AC was not a significant predictor of suicide risk at lower levels (10th and 50th percentiles) of PB.

These findings are important as they demonstrate that the interaction between PB and AC is predictive of suicide risk at high levels of PB. That the suicide risk was done by clinician rating as opposed to self-report measures adds strength to the study findings. These findings are consistent with the premise of the IPTS that both suicidal desire and the capability for suicide must be present for individuals to perform a lethal or near lethal action on themselves, although AC is of greatest impact when PB is very high.

Joiner et al. (2009) designed a study as a follow up to Van Orden et al. (2008). However their study measured both TB and PB and hypothesized that the interaction of
TB and PB as well as suicide history (AC) would be predictive of a recent suicide attempt. This study consisted of 313 (257 men, 56 women, mean age 22.17 years) patients at a major U.S. Army Medical Center. All of the patients were evaluated upon entry into another study on the efficacy of treatment for suicidal young adults. All of the patients were referred for severe suicidality (recent attempt or serious ideation) that required immediate evaluation.

The participants completed several self-rating measures including the BDI (depression) and the BHS (hopelessness). The Life Experiences - Negative (LES-Neg) was used to measure negative life events. This 57 question report measures the occurrence of stressful life events as measured on a 4 point scale. PB and TB were measured with 9 items (4 related to PB and 5 related to TB) from the Suicide Probability Scale (SPS). The full SPS is a 36 item, self-report measure related to SI constructs. Past suicide attempts and family psychiatric history were measured through an interview rated form.

The results of the psychosocial history revealed approximately 40% of the sample had a diagnosis of major depressive disorder. Bipolar spectrum diagnosis was present in 15% of the sample, 13% had anxiety disorders, and schizophrenia spectrum was present in 5% of the sample. About 20% of the sample had a diagnosis of PTSD. Past suicide attempts ($M = 1.28, SD = 3.62$) were also measured. The authors also assessed whether entry into the study involved a recent suicide attempt ($n = 125$) or serious suicide ideation ($n = 188$).

A logistic regression analysis was performed in order to determine if PB, TB or past suicide attempts (AC) as well as their interaction were predictive of recent suicide
attempts. The dependent variable for the regression was set as either recent suicide attempt or suicidal ideation. The initial analysis included age, gender, marital status, and ethnicity; family history of suicide, depression and bipolar disorder; current depressive symptoms, negative life events, hopelessness and borderline personality disorder. In this model only negative life events (LES-Neg) was predictive of current suicide attempts (Wald = 4.769, Exp (β) = 1.03, p = .03).

The second analysis added history of suicide attempts (AC), PB and TB. Only AC was a significant predictor of recent suicide attempt (Wald = 43.96, Exp (β) = 3.87, p = .001) in this model. The third analysis added interaction terms for PB/TB, PB/AC and TB/AC. None of these interactions was predictive of recent suicide attempt. The final analysis included the three way interaction between TB, PB and AC. This model was significantly predictive of recent suicide attempt (Wald = 8.57, Exp (β) = 1.85, p = .003).

The findings of this study are interesting given that as hypothesized the three way interaction term was predictive above all of the other covariates. Also of interest, the two way interaction between PB and TB was not significant (p = .43). This would be expected as the IPTS posits that all three constructs must be present in order for a person to pass from suicidal desire to intent.

Limitations with this study include the use of proxy measures for the three constructs of the IPTS. The authors note the use of past suicide attempts as a proxy for AC does not give a “pure” measure of the construct. Additionally as the participants were patients at a U.S. Army Medical Center an assumption is made of military service (though this is not explicitly stated in the article) if this is the case, true AC would likely be higher in this group compared with non-military personnel.
Despite the limitations, the findings are similar to those of Van Orden et al. (2008). In addition, the use of a clinical sample of suicidal participants provides a particularly unique opportunity to test the tenets if the IPTS. This study adds to the evidence for the use of screening for PB and TB as a means of early detection of SI.

Two other studies (Bryan, Morrow, Anestis, & Joiner, 2010; Montetith et al., 2013) are available that tested the hypothesis that PB, TB and AC interact to predict suicide risk. These two studies however use past history of suicide as the dependent variable. Both of these studies found no predictability between the three way interaction and suicide history. These results are to be expected given that the IPTS posits that past suicide attempts are predictive of AC not for current suicidality.

**Suicide Attempt History as a Predictor of Acquired Capability**

Van Orden et al. (2008) designed a study to answer the question “who can die by suicide.” The hypothesis of this study was that experience with pain, including past suicide attempts would lead to higher Acquired Capability (AC). Participants were 228 adult clients of the Florida State University psychology clinic (101 men and 127 women, ages 18 to 54, mean age 26.21). The participants completed the BSS to measure SI (item # 20 measures past suicide attempts) and the BDI to measure depression. They also completed the Impulsive Behavior Scale (IBS) and the Painful and Provocative Events Scale (PPES) to measure the number of past painful and provocative events. The ACSS was used to measure AC.

The results indicated that past suicide attempts were positively and significantly correlated with higher levels of AC ($F(2, 225) = 3.59, p = .029$). The highest levels of AC were reported by those with two or more past suicide attempts ($M = 3.13, SD = 0.87$)
followed by those with a single attempt ($M = 2.68$, $SD = 0.90$). Finally, those with no attempts reported the lowest levels of AC ($M = 2.55$, $SD = 0.81$).

The authors next conducted a set of regression analyses in order to determine if painful and provocative events (IBS + PPES) would predict AC. In the initial analysis, age, gender, depression and SI were entered and the model significantly predicted AC ($F(4, 223) = 4.34$, $p = .002$). Gender was a significant predictor such that men reported higher levels of AC ($sr = -.22$, $t(223) = -3.34$, $p = .001$). SI was also a significant predictor of AC ($sr = .13$, $t(223) = 2.03$, $p = .044$) which the authors note was contrary to their predictions.

In the second analysis, painful and provocative events were added and this model significantly predicted AC ($F(5, 222) = 7.24$, $p < .001$) and accounted for an additional 7% of the variance in AC. Painful and provocative events were significant predictors of AC ($sr = .26$, $t(222) = 4.19$, $p < .001$). Male gender also remained a significant predictor of AC ($sr = -.16$, $t(222) = -3.31$, $p = .009$). SI was not a significant predictor in this model. While not specifically part of this project, AC is an important part of the IPTS. The use of PB and TB as a screening tool in the veteran population is especially important as it is likely that veterans will have high levels of AC as a result of their training and thus be at higher risk for suicide when SI is present.

Bryan et al. (2010) conducted a study on 88 active duty military personnel. As part of this study, the participants completed the ACSS. None of the participants reported a history of previous suicide attempts. The authors compared the results of this study with those of Van Orden et al. (2008). The AC levels of the military sample were found to significantly higher than those of the outpatient clinical sample ($M = 2.60$, $SD = 0.84$;
Further, the military sample had a significantly higher level of AC than the multiple suicide attempt subgroup of this sample (M = 3.13, SD = 0.87; t(101) = 3.458, p < .001).

These findings are important as they demonstrate that military and veterans likely have a higher capability for suicide than even those people who have attempted suicide in the past. The study by Bryan et al. (2010) was conducted on junior enlisted Air Force personnel. It would be interesting to see if the levels of AC are higher in personnel trained for ground combat such as those personnel in the Army and Marine Corps when compared to other professions in the military, unfortunately no studies were available that assessed this question. This adds to the importance of screening for PB and TB in veterans who will likely have higher levels of AC than the general population.

**Interpersonal Needs Questionnaire**

The Interpersonal Needs Questionnaire - 10 which will be used for this project, was originally developed by Van Orden and colleagues (2008) in order to measure the two interpersonal constructs of the IPTS, Thwarted Belongingness (TB) and Perceived Burdensomeness (PB). The original, unpublished version, of the tool included 25 items (TB = 10 items and PB = 15 items). The INQ has several versions, including the INQ-18, INQ-12 and INQ-10. The shorter versions of the INQ (18, 12, and 10) only include items used in the original 25 question version. The questions included in the shorter versions were those questions from the original that demonstrated the highest correlation with Suicidal Ideation (SI) in a factor analysis. The length of the tool was determined by the individual researchers when they conducted their studies.
The shorter version, the INQ-10, is an easier test to administer within the timeframe of a primary care appointment (generally 20-30 minutes). The version for this project (Appendix G) will use a 3 point scale with 0 = not at all, 1 = somewhat true and 2 = very true. Items 1-5 represent PB and items 6-10 represent TB. A positive screen will be a score > 0 on items 1-5, 8 and 9. Items 6, 7 and 10 are reverse scored. On these items a score of < 2 will be deemed positive. While the responses can be totaled to yield a total score, any single item that has a positive score is considered a positive screen. Since a score of > 0 or < 2 on any item is a positive screen, the 3 point scale will sufficiently capture this.

Multiple studies have used the INQ in various forms to measure PB and TB as a predictor of Suicidal Ideation (SI). Despite these multiple studies, only three studies have examined the psychometric properties of the INQ. Freedenthal, Lamis, Osman, Kahlo, and Gutierrez (2011) examined the psychometric properties of the INQ – 12 in a large sample of undergraduate students. Using Confirmatory Factor Analysis (CFA), the authors concluded the INQ was comprised of two distinct, but related sub-factors (TB and PB). Items 1-7 on the INQ-12 related to PB while items 8-12 related to TB. The authors also suggested the two constructs were united by a single underlying interpersonal distress factor. Internal consistency was high for both PB (α = .93) and TB (α = .92).

The authors used a discriminate validity analysis in order to determine if the scores related to PB and TB were correlated with the scores for emotional distress and suicide risk. The INQ -12 total scale (PB and TB combined) were significantly associated with depressive symptoms (r = .54), hopelessness (r = .55), perceived social support (r =
.48), current SI (r = .56), current suicide proneness (r = .53) and reasons for living (r = .65). In all cases PB was more strongly correlated with these factors than TB while TB was more highly correlated with protective factors. The total scale was not significantly associated with acquired capability for suicide (r = .13). The study was limited mainly by the sample that provided low variability in the scores on the INQ. It is, however, important in that it demonstrates both high internal consistency (α > .90) and construct validity for the INQ-12.

Another study examined the structure and validity of the INQ-18 (Marty, Segal, Coolidge, & Klebe, 2012) with a large sample of community dwelling older adults. A Principle Axis Factor Analysis (PFA) was conducted in order to test if the INQ-18 in fact measures two distinct but related factors. The two factor solution explained 48.7% of the variance. Factor 1 contained eight items consistent with the concept of TB. Factor 2 contained ten items consistent with PB. The factor scores were positively and moderately correlated (r = 0.35). A criterion-related validity analysis was used to correlate the 2 factors (TB/PB) with those derived from other measurement tools. Both factors had moderate to large correlations with hopelessness (TB, r = 0.43; PB, r = 0.59), depression (TB, r = 0.33; PB, r = 0.57), SI (TB, r = 0.39; PB, r = 0.54), as well as, meaning of life (TB, r = 0.49; PB, r = 0.46).

The TB sub-scale was positively correlated with loneliness (r = 0.37) and negatively with reciprocal care (r = -0.38) which was expected. However, PB had stronger correlations with both of these (r = 0.66; r = -0.65) which was not expected. The correlation for self-esteem was nearly identical for the two factors (PB, r = -0.38; TB, r = -0.33) which the authors note was also unexpected. The authors note that these finding
may in fact be due to inadequate measures of the sub-constructs. For example, they used a one item measure of self-esteem that may not have accurately measured this construct.

Similar to the study by Freedenthal et al. (2011), Marty et al. (2012) demonstrated good construct validity. For the purposes of screening at the primary care level, Marty et al. demonstrated a correlation between the TB ($r = .39$, $p < 0.001$) and PB ($r = 0.54$, $p < 0.001$) with SI. This study adds to the evidence for screening for PB and TB and for the use of the INQ in screening for suicide risk. These studies demonstrate the effectiveness of the INQ in measuring TB and PB as well as the correlation of these two constructs and SI. Neither study measured the specificity or sensitivity of the INQ as a screening tool for SI. This means that both the INQ-12 and the INQ-18 are in fact good measures of both TB and PB.

Only one study is currently available that specifically studies the use of the INQ as a screening tool. Bryan (2011) conducted a study to: (a) examine the structure and validity of the INQ-10, (b) determine if TB and PB as measured by the INQ-10 are related to other clinical variables, and (c) test if the INQ-10 improves the ability to detect current SI and by how much. The participants included 219 service members (91.8% male, average age 27.75) deployed in support of Operation Iraqi Freedom (OIF) who were being treated at a mental health facility. No information was available regarding the participants’ past suicide attempts.

The participants completed several self-assessment measures including the INQ-10 for TB and PB. Insomnia was assessed using the Insomnia Severity Index (ISI), which is a seven item measure of insomnia severity. The scale items are scored on a five point scale. PTSD was assessed with the PTSD Checklist – Military (PCL-M), which is a 17
item inventory that assesses the severity of each PTSD symptom. This scale is currently used by both the military and VHA for the assessment of PTSD. General health functioning was measured by the Behavioral Health Measure (BHM). The BHM is a 20 item questionnaire measuring wellbeing, psychological symptoms and life functioning with items scored on a five point Likert-like scale. Current SI was measured by item 10 on the BHM that asks about “thoughts of ending your life” (0 = almost always, 4 = never).

Both factors of the INQ demonstrated good internal consistency (PB $\alpha = 0.806$; TB $\alpha = 0.855$). Both factors together explained 54.181% of the variance in the measure of SI. PB and TB were both correlated with SI (PB, $r = 0.35$; TB, $r = 0.30$), Global health functioning (PB, $r = -0.45$; TB, $r = -0.64$), insomnia (PB, $r = 0.29$; TB, $r = 0.40$) and PTSD symptoms (PB, $r = 0.31$; TB, $r = 0.44$). Interestingly TB had a stronger association with all measures except the SI measure.

In order to establish criterion validity for the INQ-10, Bryan determined the difference in PB and TB total subscale scores for those with SI ($n = 13$) versus without ($n = 201$); five subjects did not answer the SI question. Those with SI reported significantly higher levels of PB ($M = 2.18$, $SD = 0.85$) compared with non-SI ($M = 1.25$, $SD = 0.60$; $t(12.801) = 3.919$, $p < 0.001$). The same was true for TB with SI ($M = 4.65$, $SD = 1.30$) compared with TB without SI ($M = 2.59$, $SD = 1.50$; $t(14.167) = 5.473$, $p < 0.001$), supporting the criterion validity of the INQ-10.

Next the optimal cutoff scores were calculated for both PB and TB. Only 30.1% of the sample endorsed some form of PB. A Receiver Operator Characteristic (ROC) analysis was conducted and revealed a score of 1 on the PB scale to be sufficient to
differentiate suicide ideators from nonideators (AUC = 0.863). This suggested that a score at or above 1 on any PB item maximized sensitivity (0.923) and specificity (0.736). Likelihood was calculated for this sample, which indicated a positive score on the PB scale (1 or greater) was associated with an 18% likelihood of SI. The likelihood of detecting SI without the use of the PB scale was 5.9%. If a person screened negatively on the PB scale (score of 0) their probability of SI was 0.6%.

The same procedures were conducted for the TB subscale. The ROC analysis revealed an optimum cutoff score for TB of 3.2 (AUC = 0.835). A sensitivity of (0.923) and a specificity of (0.701) were reported with this cutoff. The likelihood ratio for a positive screen was 16.2% versus 5.9% without. The likelihood of SI with a negative screen was 0.7%.

Bryan (2011) notes that increasing the chance of identifying SI from 6% to 18% with the use of the INQ is important. He also notes that while this percentage may seem small, a service member without the screen had a 1 in 20 chance of SI compared to a 1 in 5 chance with the screen. A negative screen reduced the chance of SI to 1 in 200. This is very important from a primary care screening standpoint. This tool is being proposed for use to identify those at risk for SI and not necessarily those with active SI. These results confirm the risk for SI associated with a positive screen on the INQ. It further suggests that a positive screen is powerful enough to warrant a formal suicide ideation screen at the point of care and a referral to a mental health professional.

Limitations of the study include the use of deployed military personnel which may have had some influence on the answers given on the self-rating questionnaires due to concerns about anonymity. Additionally the sample was heavily male which reflects
the deployed status of the sample. The sub-sample of those with SI was small but as a clinical sample is likely larger than would be found in the general population. These items limit the generalizability of the findings. Additionally, it would have been interesting to see the calculations given for those who endorsed both PB and TB relative to their SI probability. It is possible a positive screen on both would have increased the sensitivity and specificity of the tool.

The INQ does not have a copyright which would prohibit it from being used as a screening tool in clinical practice. Permission was obtained from the publisher John Wiley and Sons for the use of the INQ (Appendix F) as well as the authors (K.A. Van Orden, personal communication, January 30, 2015; C. Bryan, personal communication January 30, 2015). These emails are contained in Appendix H and Appendix I.

Conclusion

Numerous suicide risk factors exist and screening for all of them in primary care would be extremely difficult. The literature reviewed in this chapter clearly demonstrates that TB and PB, which can easily be screened, are robust predictors of SI. The 18 studies reviewed cover a variety of populations. The literature fairly consistently shows both PB and TB are better predictors and mediators of SI than other known risk factors for suicide such as depression and hopelessness. With a few exceptions, the literature demonstrates that PB is a more robust predictor of SI than TB.
CHAPTER 4

METHODS

The reviewed evidence demonstrated that Perceived Burdensomeness (PB) and Thwarted Belongingness (TB), as measured by the Interpersonal Needs Questionnaire (INQ), are valuable screening tools for suicide risk for veterans seen within primary care. Two questions remained: (a) how much would the INQ, which has been extensively tested in research, be accepted by primary care providers as a valuable addition to suicide risk screening in their practices, and (b) what percentage of patients presenting to a non-VHA primary care practice are veterans? This chapter will discuss the methods for measuring the acceptability of the INQ among providers within a non-VHA primary care facility as well as among primary care nurse practitioners who belong to a state organization. Additionally, a method to measure the number of veterans who present to the non-VHA primary care facility during a set timeframe is discussed. Included in this chapter are: (a) the site information, (b) the detailed procedures, (c) outline of the education on the INQ and the IPTS, and (d) the Institutional Review Board (IRB) information.

Sites

Non-VHA Primary Care Facility

The setting for this project was a non-VHA primary care clinic operated by a large, non-profit medical center located in a large Midwestern city. The facility is used as
a resident training site for primary care physicians. During fiscal year 2013 (July 1, 2012 to June 30, 2013) the facility had 10,731 unique patient visits made by 2797 different patients (N. Norton, personal communication, July 21, 2014). Current suicide risk screening practice at the facility is the use of the PHQ-9 (Kroenke, Spitzer, & Williams, 2001). This screening tool is used on every patient during each visit, regardless of chief complaint. The PHQ-9 is a nine question screening tool for depression that also includes a single item assessing for recent suicidal ideation. The facility is connected to a large hospital with an emergency room. Patients that are deemed acutely suicidal during their primary care visit are transferred to this emergency department for disposition to either an outpatient or inpatient psychiatric practice not available at the site.

The clinic does not currently monitor or record the veteran status of their patients (H. Holman, personal communication, July 21, 2014). One of the hospitals, in the same health system and in close proximity to the clinic, recently performed an unpublished, informal assessment of the number of veteran patients on one inpatient unit. The assessment was conducted from September 29, 2014 to October 17, 2014. Patients self-identified as a veteran at the time of registration. The results of this study revealed 20% of the 250 patients on the unit identified as veterans (J. Hemming, personal communication, March 11, 2015). These data combined with the information by Katz et al. (2012) that over 75% of veterans are treated outside of VHA raises the question of how many unidentified veterans are being seen at these non-VHA clinics.

**State Nurse Practitioner Organization**

The selected site does not employ any advance practice nurses as primary care providers. In order to include nurse practitioners in the sample of providers, a large
professional state organization for nurse practitioners was used. This organization is located in the same state as the project site. The membership base of this organization is mainly nurse practitioners specializing in adult care. There is another state organization for nurse practitioners specializing in pediatrics.

**Additional Primary Care Sites**

Attempts were made to add additional primary care and internal medicine sites to this project in order to increase the sample size. The additional sites were all located within the same health system as the project site. An email containing a description of the project was sent to the division chief for primary care of the health system. The division chief forwarded this email along with a request for volunteer sites to all the lead providers of the individual sites within the organization. One internal medicine clinic practice manager responded by email and declined to participate due to ongoing projects already in place at the clinic. No other clinic personnel within the health system responded to the request. In addition, the organization’s sponsor for the project attended a meeting with the leads of the various clinics. No volunteers to participate came forward at the meeting.

**Sample**

A total of 57 providers received an email containing links to participate in the project. Of the 57 providers, 33 (57.9%) providers completed at least a portion of the project. Table 2 contains information about the participants who completed some portion of the project.
Physicians

The primary care residency clinic had 24 primary care physician providers (12 attending and 12 residents) who received an email containing information about participating in the project. A total of 4 (16.7%) of the 24 physicians completed at least a portion of the project. Of the 4 physicians who participated, 2 (50%) completed both the pre and posttest and 2 (50%) completed just the pretest. Of the 2 physicians who completed both tests, 1 (50%) completed the entire project in less than 3 minutes (this physician is listed with the pretest only group). None of the physicians self-identified as veterans.

Table 2

*Project Participants*

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<tr>
<th>Years in Practice</th>
<th>Physicians pretest only n</th>
<th>Physicians pretest only %</th>
<th>Physician pre and posttest n</th>
<th>Physician pre and posttest %</th>
<th>NP pretest only n</th>
<th>NP pretest only %</th>
<th>NP pre and posttest n</th>
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<td>0.00</td>
<td>1</td>
<td>3.45</td>
<td>5</td>
<td>17.24</td>
</tr>
</tbody>
</table>

Nurse Practitioners

A recruitment email was sent to 1524 nurse practitioners and a total of 33 (2.17%) nurse practitioners responded to the recruitment email indicating a willingness to participate. A total of 29 (87.9%) of 33 nurse practitioners completed at least a portion of the project. Of the 29 nurse practitioners who participated, 26 (89.7%) completed both the pre and post tests and 3 (10.3%) completed only the pretest. Of the 24 nurse
practitioners who completed both tests, 4 (16.7%) completed the entire project in less than 3 minutes. Only 1 (3.45%) of the 29 nurse practitioners self-identified as a veteran.

Pretest Posttest Survey

Pre and post-tests were created for this project to evaluate the impact of the training. The pre-test was used to measure knowledge and beliefs before the education (Appendix J). This survey includes demographic questions as well as questions about the: (a) necessity of screening veterans in a non-VHA setting, (b) current suicide risk screening practice, and (c) any prior knowledge of the IPTS. The post-test survey was used to measure knowledge gained and the acceptability of the training regarding the INQ and IPTS (Appendix K). This survey includes questions from the pretest (excluding demographic questions) and also includes questions specific to the INQ. Data for these surveys were collected using Survey Monkey.

Procedures

The procedures for accomplishing the goals of this project were done simultaneously. The first procedure focused on measuring the knowledge gained about and acceptability of the INQ and IPTS among the providers at the primary care site as well as among advanced practice nurses from the state nurse practitioner organization. The second procedure measured the necessity of screening veterans at the non-VHA primary care site.

Knowledge and Acceptability of the INQ and IPTS among Primary Care Providers

In this portion of the project, the primary care providers at the sites were recruited to participate, provided with education on the INQ and IPTS and asked to complete a
short survey to measure their acceptance of the concepts in the training. This was accomplished in the following steps:

- An information email was sent to all providers at the non-VHA primary care clinic (Appendix L) in late May 2015. The email introduced and provided contact information for the primary investigator (PI) of the project. This email also provided information about the project including its focus on suicide, the time commitment of participating and the goals of the project. Providers were told that another email containing the training and survey would be delivered via email within the following week. They were asked to participate in the training and survey and also informed that they were not obligated in any way to participate in the project.

- An information email was also sent to all members of the state nurse practitioner organization through the organization’s email list (Appendix M) in late May 2015. The email introduced and provided contact information for the primary investigator (PI) of the project. This email also provided information about the project including its focus on suicide, the time commitment of participating and the goals of the project. On this initial email they were asked to follow a provided link in order to opt into the project.

- All providers at the non-VHA primary care clinic and those nurse practitioners who opted into the project received another email containing the training on the INQ and IPTS and the pre/posttest surveys. The training was done using Microsoft PowerPoint converted to a movie using Windows Movie Maker. An outline of the training is provided in Appendix N. Providers/participants had the
ability to stop and restart the training module in order to fit it into their schedule. Providers had 30 days from the time of receiving the email to complete the training. A reminder email was sent to the providers approximately two weeks after the email containing the training as a reminder to complete the training (Appendix O).

Number of Veterans Presenting to the Non–VHA Primary Care Clinic

This portion of the project counted the number of veterans presenting to the site for a primary care appointment over the course of 30 days. This procedure was intended to explore the necessity of implementing veteran specific programs, such as this suicide risk screening, in a non-VHA primary care facility. The steps for this procedure were as follows:

- A tracking sheet (Appendix P) was provided to the registration staff at the site to record the number of patients presenting to the site and their veteran status.

- The registration staff was also provided with a script (Appendix Q) in order to communicate the purpose of the tracking sheet and to reassure the patients that no personal information was being recorded with the tracking sheet.

- An informative meeting was conducted with the registration staff and other interested staff of the site prior to the start of the project. This meeting was used to clarify the collection and storage of the data. In addition, questions regarding the script for the staff as well as questions related to project were addressed.

- The tracking sheets were stored at the site and collected by the PI.
Risk and Safety

This project did not increase any risk for the safety of the patients or staff. The project did contain some risk for inconvenience of staff and loss of time to the participants in completing the online education and the pre and post education surveys (approximately 20 minutes). Additionally there was potential that some veterans may hesitate to identify themselves for fear of denial of service at the participating clinic site through referral to the VHA.

Data Collection

Patient Data

No identifying patient data were collected during the course of this project. Information regarding the number of veterans attending the project site was recorded on paper at the front desk of that location. The staff at the site required some reminders during the month regarding the process of collecting the patient data. These data were stored in a locked cabinet on site and transferred to a locked cabinet at GVSU by the PI.

Staff Data

Data from staff were gathered in order to determine the acceptability of the INQ and IPTS. These data came from the pre and post educational questionnaires and were sent electronically to the PI automatically at the completion of the educational module using Survey Monkey. The SSL encryption feature was enabled and the IP address tracking feature was disabled within the Survey Monkey program. This information was stored in accordance with the data security protocol of both Grand Valley State University and medical center site on an encrypted flash drive stored in a locked cabinet.
Emails from participants from the nurse practitioner organization who opted into the project were deleted after the project email was sent through Survey Monkey. All other emails sent from participants were deleted.

**IRB and Informed Consent**

The procedures outlined in this chapter were approved by the IRBs of both Grand Valley State University and the medical center site. The final approvals for the project can be found in Appendix R and S. Completion of the training and questionnaire was considered consent. A statement was contained in the initial email to providers stating participation in this project was voluntary and participants were not obligated in any way to complete the training or questionnaire.
CHAPTER 5

RESULTS

The purpose of this scholarly project was to explore both the need to screen veterans for suicide risk in a non-VHA setting as well as the acceptability of the Interpersonal Needs Questionnaire (INQ) as a suicide risk screening tool for veterans among non-VHA primary care providers. The purpose of this chapter is to present the results of the needs assessment and the survey measuring the acceptability of the INQ.

Respondents

A total of 33 (57.9%) of the 57 providers who received the training, completed at least a portion of the project. Of the 33 providers who participated, 26 (81.3%) completed both the pre and posttest and 6 (18.7%) only completed the pretest. Of the 26 providers who completed both tests, 5 (15.6%) completed the entire project in less than 3 minutes making it unlikely the answers on the posttest were influenced by the educational media presentation.

The data from the posttests for the participants who completed the project in less than three minutes is not likely to have been based on information gained from watching the educational offering. For this reason, only the information from the pretests of these participants will be used in the analysis.

Responses by physicians

A total of 4 (16.7%) of the 24 physicians completed at least a portion of the project. Of the 4 physicians who participated, 2 (50%) completed both the pre and
posttest and 2 (50%) completed just the pretest. Of the 2 physicians who completed both tests, 1 (50%) completed the entire project in less than 3 minutes.

**Responses by nurse practitioners**

A total of 33 (2.17%) of the 1524 nurse practitioners who received the recruitment email agreed to participate. A total of 29 (87.9%) of 33 nurse practitioners completed at least a portion of the project. Of the 29 nurse practitioners who participated, 26 (89.7%) completed both the pre and post tests and 3 (10.3%) completed only the pretest. Of the 24 nurse practitioners who completed both tests, 4 (16.7%) completed the entire project in less than 3 minutes.

**Necessity of Screening Veterans in a Non-VHA Setting**

The first purpose of this project was to assess the necessity of screening veterans for suicide risk in a non-VHA setting. The necessity for screening veterans in a non-VHA setting was assessed using three procedures. The first was identifying the number of veterans presenting to the primary care residency clinic at a medical center in a large metropolitan area in the Midwest over the course of 30 days.

A total of 517 patients presented to the clinic for appointments over the course of the project. Of these, 19 (3.7%) of the patients identified themselves as having served in the United States Military. The data were collected manually, using a checklist and no names, so the possibility exists for some of these patients to have been counted on more than one occasion. In addition, the staff reported times when they were unable to ask the patients about veteran status due to office conditions.

In addition to these data, providers were asked about their perception of the number of veterans presenting to their site over the course of 30 days before and after
receiving the educational offering. Results for this question are listed in Table 3. Five choices were given: 1 (0-10), 2 (11-20), 3 (21-30), 4 (31-40), and 5 (>40). The intention was to compare these data with the data on veterans obtained from the site. Unfortunately only four physicians from the site participated in the project and only one physician completed the entire project. The remaining participants were nurse practitioners who do not work at the site.

Table 3

Perception of Number of Veterans Served

<table>
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<tr>
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</tr>
</thead>
<tbody>
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</tr>
<tr>
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</tr>
<tr>
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</tr>
<tr>
<td>Physician pretest</td>
<td>3</td>
</tr>
<tr>
<td>Physician posttest</td>
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</tr>
<tr>
<td>Total post</td>
<td>6</td>
</tr>
</tbody>
</table>

Overall, the majority of the participants’ scores about the perception of the number of veterans presenting to their site over 30 days remained unchanged after the education with only 5 of the 23 scores increasing. Due to the nominal (categorical) nature of the data, these data were analyzed using the chi-square test for independence to determine if there was a statistically significant change in scores. As with all the questions, only the matched data from the 23 participants who completed the posttests were included in this analysis. The results indicated there was a not a significant
difference $\chi^2 (3, n = 46) = 1.419, p = .701$) from pretest to posttest in the number of veterans the providers believe are seen at their employment site in a 30 day period.

The participants were next asked about their perception of the risk for suicide in veterans compared with non-veterans before and after receiving the educational offering. Data from this question are listed in Table 4. Five choices were given: 1 (much lower), 2 (lower), 3 (same), 4 (higher), and 5 (much higher).

Table 4

*Perception of Suicide Risk for Veterans*

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<td>5</td>
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<td>0.0</td>
<td>6</td>
<td>26.1</td>
<td>17</td>
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</table>

Overall, the perception about suicide risk in veterans increased after the educational offering. The participants had a median score of 4.00 before the education suggesting they already believed veterans to be at a higher risk for suicide. After the education the median score increased to 5.00 indicating the participants believed veterans to be at a much higher risk for suicide than non-veterans. These data from the 23 completed projects were analyzed using the Wilcoxon Signed Rank Test to determine if
this increase was statistically significant. The results of this analysis indicated there was a significant increase ($Z = -2.887, p = .004$) from pretest to posttest in the providers’ perception of suicide risk in veterans compared to non-veterans. Nine of the 23 respondents’ scores increased and 14 remained unchanged.

**Acceptability of the INQ**

The second purpose of this scholarly project was to assess the acceptability of the Interpersonal Needs Questionnaire (INQ) as a suicide risk screening tool for veterans in a non-VHA setting. There were three goals in assessing the acceptability of the INQ. The first question was to explore the provider’s perception of the current practice of screening for suicide risk. The second question was to measure the participant’s knowledge about the concepts of the Interpersonal Theory of Suicide (IPTS) before and after watching the educational offering. The third question was to explore the participant’s confidence in the INQ as a suicide risk screening tool and willingness to refer patients based on a positive screen with the INQ.

**Current Screening**

In order to assess the current practice of suicide screening, the providers were asked whether a suicide screening tool is currently used in practice. Of the 33 participants, 60.6% ($n = 20$) answered no and 39.4% ($n = 13$) answered yes. Of the 13 participants who stated they are using a suicide screening tool, 76.9% ($n = 10$) indicated they use the Patient Health Questionnaire-9 (PHQ-9), 7.7% ($n = 1$) indicated the “self-harm tool,” 7.7% ($n = 1$) indicated the Suicide Behaviors Questionnaire-Revised (SBQ-R) and, 7.7% ($n = 1$) used the adolescent questionnaire.
The participants were asked about their confidence in screening for suicide risk in primary care. Five choices were given: 1 (not at all), 2 (little), 3 (somewhat), 4 (much), and 5 (very much). The results of this question are listed in Table 5.

Table 5

*Confidence in Screening for Suicide Risk*

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Overall the results indicated that, after participating in the educational offering, the participants’ confidence in screening for suicide risk increased slightly. While there was no change in the overall median (4.00) between the pre and posttests, there was a shift in score distribution indicating an increase in confidence. These data were analyzed using the Wilcoxon Signed Rank Test to determine if this increase was statistically significant. The results of this analysis indicated there was not a significant increase in confidence ($Z = -1.387, p = .166$).
Next, the providers were asked about confidence in the PHQ-9 as a suicide risk screening tool. Five choices were given: 1 (not at all), 2 (little), 3 (somewhat), 4 (much), and 5 (very much). The data from this question are listed in Table 6.

Table 6

*Confidence in the PHQ-9 As a Suicide Risk Screening Tool*

<table>
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<td>10</td>
<td>43.5</td>
<td>1</td>
<td>4.3</td>
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</table>

After participating in the educational offering, the participants’ confidence in the PHQ-9 as a suicide risk screening tool decreased. The overall pretest median of 3.00 decreased to posttest score of 2.00. These data were analyzed using the Wilcoxon Signed Rank Test to determine if this decrease was statistically significant. The results of this analysis indicated there was a significant decrease (Z = -3.824, p < .001) from pretest to posttest in the providers’ confidence in the PHQ-9 as a suicide risk screening tool.
Knowledge of the Interpersonal Theory of Suicide

The participants were provided with education related to the concepts of the IPTS. The purpose of this education was to increase the participants’ knowledge of the influence the concepts of the IPTS have on suicide risk. Participants were asked about the concepts of Perceived Burdensomeness (PB) and Thwarted Belongingness (TB). The concept of Acquired Capability was assessed through the two sub-concepts of decreased fear of death and increased tolerance to pain.

The participants were first asked about the influence of TB on suicide risk. Five choices were given: 1 (not at all), 2 (little), 3 (somewhat), 4 (much), and 5 (very much). Data from this question are listed in Table 7. After participating in the educational offering, the providers’ knowledge of the influence of TB on suicide risk increased. The overall pretest median was 5.00 and thus could not go up. The mean increased from a pretest value of 4.55 to a posttest value of 4.87. These data were analyzed using the Wilcoxon Signed Rank Test to determine if this increase was statistically significant. The results of this analysis indicated there was a significant increase ($Z = -2.530, p = .011$) from pretest to posttest in the providers’ knowledge of the influence of TB on suicide risk.
The participants were next asked about the influence of PB on suicide risk. Five choices were given: 1 (not at all), 2 (little), 3 (somewhat), 4 (much), and 5 (very much). The data from this question are listed in Table 8. After participating in the educational offering, the providers’ knowledge of the influence of PB on suicide risk increased. The pretest median was 5.00 and thus could not go up. The mean increased from a pretest value of 4.70 to a posttest value of 4.87. These data were analyzed using the Wilcoxon Signed Rank Test to determine if this increase was statistically significant. The results of this analysis indicated there was not a significant increase ($Z = -3.824$, $p = .102$) from pretest to posttest in the providers’ knowledge of the influence of PB on suicide risk.

### Table 7

**Perception of Thwarted Belongingness on Suicide Risk**

<table>
<thead>
<tr>
<th>Respondents</th>
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<tbody>
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<tr>
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Table 8

*Perception of Perceived Burdensomeness on Suicide Risk*

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<td>posttest</td>
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</tr>
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<td>Total pre</td>
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</table>

Next, the participants were asked about the influence of reduced fear of death on suicide risk. Five choices were given: 1 (not at all), 2 (little), 3 (somewhat), 4 (much), and 5 (very much). The data from this question are listed in Table 9. After participating in the educational offering, the providers’ knowledge of the influence of reduced fear of death on suicide risk increased. The overall median increased from 4.00 to 5.00, indicating an increase in knowledge. These data were analyzed using the Wilcoxon Signed Rank Test to determine if this increase was statistically significant. The results of this analysis indicated there was not a significant increase ($Z = -1.679$, $p = .093$) from pretest to posttest in the providers’ knowledge of the influence of reduced fear of death on suicide risk.
Table 9

_Perception of Fear of Death on Suicide Risk_

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<td>10.3</td>
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<tr>
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<td>2</td>
<td>9.1</td>
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<td>5</td>
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<tr>
<td>Physician posttest</td>
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<td>0</td>
<td>0.0</td>
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<tr>
<td>Total pre</td>
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<td>3</td>
<td>9.1</td>
<td>8</td>
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<tr>
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<td>2</td>
<td>8.7</td>
<td>1</td>
<td>4.4</td>
<td>5</td>
</tr>
</tbody>
</table>

Finally, the participants were asked about the influence of increased tolerance for pain on suicide risk. Five choices were given: 1 (not at all), 2 (little), 3 (somewhat), 4 (much), and 5 (very much). The data from this question are listed in Table 10. After participating in the educational offering, the providers’ knowledge of the influence of increased tolerance for pain on suicide risk increased. The overall median increased from 3.00 to 5.00 indicating an increase in knowledge. These data were analyzed using the Wilcoxon Signed Rank Test to determine if this increase was statistically significant. The results of this analysis indicated there was a significant increase (Z = -2.515, p = .012) from pretest to posttest in the providers’ knowledge of the influence of increased tolerance of pain on suicide risk.
Table 10

Perception of Increased Tolerance of Pain on Suicide Risk

<table>
<thead>
<tr>
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<tr>
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<td>24.2</td>
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<td>24.2</td>
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<td>8.7</td>
<td>1</td>
<td>4.4</td>
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Interpersonal Needs Questionnaire

The participants were provided with education on the INQ-10 including sensitivity and specificity, use in multiple populations, scoring and how the tool fits into workflow. The participants were asked about their confidence in the INQ as a suicide risk screening tool. Five choices were given: 1 (not at all), 2 (little), 3 (somewhat), 4 (much), and 5 (very much). The results of this question are listed in Table 11.
Confidence in the INQ-10 in Screening for Suicide Risk

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Choice Distribution</th>
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<td>100.0</td>
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</tbody>
</table>

The providers were also asked about their likelihood of making a mental health referral based on a positive screen on the INQ. Five choices were given: 1 (not at all), 2 (little), 3 (somewhat), 4 (much), and 5 (very much). The results of this question are listed in Table 12.

Likelihood of Mental Health Referral Based on the INQ-10

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Choice Distribution</th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Median</th>
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<td>%</td>
<td>n</td>
<td>%</td>
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<tr>
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<td>1</td>
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<tr>
<td>Physician</td>
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</table>

Overall the providers indicated both a high acceptability of the INQ as well as a high likelihood of making a referral based on a positive score.

Summary

Twenty-three providers completed the educational media presentation for this project. Despite the low response rate by the providers at the clinic, the educational intervention did result in some belief changes that might result in changes in practice in those that participated. The posttest scores indicate increased knowledge of the concepts.
of this project. In addition, the providers indicated a high confidence in the INQ as a suicide risk screening tool and a high likelihood of making a mental health referral based on the results of the INQ.
CHAPTER 6

DISCUSSION

The purpose of this scholarly project was to explore both the need to screen veterans for suicide risk in a non-VHA setting as well as the acceptability of the Interpersonal Needs Questionnaire (INQ) as a suicide risk screening tool for veterans among non-VHA primary care providers. The purpose of this chapter is to discuss the results of the project as they relate to the theories/frameworks and literature review. In addition, the strengths and limitations of the project and the implications for future work are discussed. Finally, implications for nursing practice and the various roles of the Doctor of Nursing Practice in relation to this scholarly project are discussed.

Theory/Frameworks

Four theories/frameworks were blended together to guide this project. The Public Health Approach for Violence Prevention was the overall guiding conceptual framework. The Interpersonal Theory of Suicide (IPTS) guided the concepts of suicide and the proposed intervention of the Interpersonal Needs Questionnaire (INQ). The Promoting Action on Research Implementation in Health Systems (PARIHS) model guided the implementation of the project within the organization. Finally the Analyze, Design, Develop, Implement and Evaluation (ADDIE) framework was used to guide the educational intervention for this project.

The five steps of Public Health Approach (Goldsmith et al., 2002) framework (define the problem, identify risk and protective factors, develop and test interventions,
implement interventions and evaluate effectiveness) provided a guide to completing this project. While each of these steps was integrated with other frameworks or theories to form the working model for this project, the Public Health Approach was the main framework. While the public health approach was extremely valuable, it required additional theories or frameworks in order to adapt this project. For instance, the second action of this framework is the identification of risk and protective factors for the problem, in this case suicide. Identifying the risk and protective factors helps in the understanding of suicide but it does not differentiate between suicide risk, ideation, intent or desire. Another theory was required to clarify these concepts.

The phenomenon of suicide is complex with risk and protective factors, warning signs, and various degrees of suicidality that must be considered. The IPTS (Joiner, 2005) was instrumental to understanding suicide and, more importantly, to understanding the difference between someone with various degrees of suicide risk and someone who is acutely suicidal. This is an important distinction particularly when screening someone for these two variations. People who are acutely suicidal, meaning they have the desire to die and possibly the intent for self-harm, are considered a medical emergency. People in this phase of suicidality would need to be immediately protected and evaluated in an emergency department for possible inpatient mental health admission. People who are at risk for suicide may be depressed or have other distal risk factors. They are not acutely suicidal but have elevated risk of becoming acutely suicidal in the future. These individuals would need resources such as education on a safety plan (911 or crisis line number) and mental health services and counselling. They could likely receive the mental health appointment in an outpatient setting.
The IPTS makes the potential suicide process clearer. The theory suggests that in order for a person to experience suicidal ideation, the two interpersonal constructs of Thwarted Belongingness (TB) and Perceived Burdensomeness (PB) must be present. These two interpersonal constructs of TB and PB provide easy to understand, measurable concepts (via a version of the INQ) for screening for suicide risk. Further, the concepts of the IPTS facilitated the education of the providers. The IPTS made teaching about suicide simple and accessible through online media in a short period of time. The IPTS and the concepts it contains also largely guided the literature review for the project.

The ADDIE framework (Forest, 2014) was instrumental in guiding the educational intervention used in this project. The framework calls for the analysis of the target audience in order to properly design and develop education. This was an important consideration for this project as the members of the target audience were all busy primary care providers. In addition, the nurse practitioners were from all over the State. These considerations led to the design and development of an educational program that was relatively short in length at less than 20 minutes. Further the education was deliverable over electronic media and accessed by the providers as time allowed. The education could also be started and stopped as needed to fit into the schedule of the audience.

The PARIHS framework (Kitson et al., 1998) was used to guide the implementation within the two organizations. The PARIHS model uses a three step process for the implementation of Evidence Based Practice (EPB) into healthcare organizations. These three steps include the appraisal of evidence, the context of the organization where the EPB will be implemented and, the facilitation of the implementation. For this project, the literature review was largely guided by the public
health approach and the IPTS. The evidence was appraised and supported the value of TB and PB, as measured by the INQ-10, for the identification of suicide risk. Two organizations were identified and evaluated for the likelihood of successful implementation of the educational intervention and corresponding surveys. Both organizations had cultures and leadership structures that made successful implementation possible. Finally, the PARIHS model guided the facilitation of the implementation including the collection and analysis of data.

All four of these frameworks/theories were instrumental in the success of this project. As noted, these frameworks were blended together to form the final working framework. This blended model added to the strength of the project by ensuring that each phase of the project was guided by a specific framework or combination of frameworks. Overall these frameworks allowed for constant evaluation and adaptation to the multiple barriers that presented over the course of the project. Not all of the barriers, such as a lack of veteran referral system, could be overcome during the course of the implementation. However, the blended frameworks were instrumental in adapting to certain barriers, such as the inability to implement onsite training. This ability to adapt to certain barriers provided flexibility to the project.

**Literature Review**

The literature review was instrumental in the development of this project. Guided by the public health approach and interpersonal theory of suicide, the literature review was divided into two sections including defining the problem and risk factors/intervention. A number of problems were identified during the literature review including an increased risk of suicide among veterans compared to the general
population, a low rate of suicide risk detection at the primary care level and a high number of veterans using healthcare outside of the VHA. These problems defined the basis of the project and further guided the remaining literature review.

The literature clearly demonstrated the obvious need of an evidence based screening tool for suicide risk at the primary care level both within and outside the VHA. This conclusion was drawn based on the evidence that many suicide victims present to primary care relatively close to their deaths (Denneson et al., 2010). The vast majority of suicide screening tools currently in use in primary care are designed to detect suicidal ideation or acute suicidality and not suicide risk (Gaynes et al., 2004). The literature reviewed for this project clearly supported that the concepts of TB and PB are upstream predictors of suicide risk. Further, these concepts were stronger predictors of suicide risk than all of the known risk factors of suicide such as depression and hopelessness. While the focus of this project was the detection of suicide risk in veterans, the literature demonstrated the INQ could be used in any number of high risk populations to detect suicide risk making it useful at the primary care level for all recipients of care.

Several studies were reviewed that examined the validity of the various forms of the INQ. The literature demonstrated that the INQ and specifically the INQ-10 had adequate specificity and sensitivity as a suicide risk prediction tool and could be adapted for use in a primary care practice. For the purposes of this project, this literature demonstrated the effectiveness in suicide risk prediction of both the concepts of the IPTS as well as the INQ.

Finally, the information synthesized from the literature review was used in the development of the educational intervention. This information, along with information on
the IPTS, was used to form the survey to measure the knowledge gained through the educational media presentation.

Findings

The findings for this project are divided into two sections corresponding to the two goals for the projects. These goals were determining the need for veteran screening in the non-VHA primary care clinic environment and measuring the acceptability of the INQ among primary care providers.

Necessity of Screening Veterans in a Non-VHA Setting

Three data items were used to examine the need for screening veterans in a non-VHA primary care setting. First, identifying the number of veterans presenting to non-VHA primary care clinics within a large health system was attempted. Despite attempts to recruit multiple sites, only one primary care clinic agreed to participate. Nineteen (3.7%) of the people presenting to the clinic over the course of the project self-identified as a veteran. This measure was well below the 20% that was found within an inpatient sample in the same health system. The relatively low number of veterans at this site was not entirely unexpected. In fact, the reason attempts were made to recruit multiple sites was the realization that data from a single site would be dependent on the population being served at that site. In fact, the population served at this primary care residency practice is a lower income population made up primarily of families including a large number of women and children. The clinic is located in a downtown setting less than 10 miles from the local VHA primary care clinic.

Second, the providers’ perception of the number of veterans presenting to their place of employment over 30 days was determined. In general, the perception of number
of veterans served by the providers increased after completing the training. The perception of the single physician who completed the training and works at the site went up dramatically from 0-10 veterans to > 40 veterans. While this is greater than the actual number of veterans who were recorded as seen at the site, it is important because it demonstrates an understanding of the higher number of veterans who are likely to use non-VHA health care. This was generally the case for the nurse practitioner providers who also demonstrated an increased awareness of the number of veterans presenting to their sites after the education. No attempts were made to validate veteran status at the nurse practitioner’ practices.

Finally, the providers’ perception of suicide risk among veterans was assessed. In general, all the participants had a perception of elevated suicide risk in the veteran population prior to receiving the training. The median score before the training was 4 indicating the providers believed veterans were at a much higher risk for suicide than non-veterans. This pre-education belief could be attributed to recent media reports about veteran suicide or possibly due in part to the recruitment letter sent to participants that had information regarding the rate of veteran suicide. Even given the fact the providers had a high pre-education perception of elevated suicide risk in veterans, the perception increased significantly after the education. After the education the providers believed the risk of suicide among veterans was much higher compared to non-veterans. This perception was evidenced by the increase in median score from 4 to 5.

All three of these measures were important for examining the necessity for screening veterans in a non-VHA setting. While the percentage of veterans presenting to the site was low, it still demonstrates that veterans are presenting to non-VHA settings. In
addition, providers had an increased perception of the number of veterans who might be presenting to their sites. It is likely that measures from multiple sites would demonstrate a higher number of veterans presenting than did the measure from the single site. Further, the providers had an understanding of the high risk for suicide among veterans. These data support the need to screen veterans for suicide risk in non-VHA settings. In fact, systems should be put into place in non-VHA settings not only to screen for suicide risk but to provide treatment specific to the veteran population.

Acceptability of the INQ

Three sets of questions were used to examine the acceptability of the INQ as a suicide risk screening tool for veterans among primary care providers. These included (a) examining the current practice of screening for suicide among the providers, (b) assessing the knowledge of the concepts of the IPTS among the providers, both before and after the educational module and (c) assessing the confidence and likelihood of referral among providers with regard to the INQ.

Current practice. Assessment of current suicide risk screening practices among the providers was accomplished by first determining the type of suicide risk screening tool the providers were using in practice. The majority of practitioners (60.6%, n = 20) did not use a formal method of screening for suicide. In one regard this was surprising given that suicide is the 10th leading cause of death in the general population. In another, it may not be surprising given that the U.S Preventative Task Force does not advocate for, or against, the use of screening tools given their low reliability to detect suicidal ideation (Gaynes et al., 2004). Unfortunately this project did not include an assessment of the reasoning behind a provider’s decision not to use a suicide screening tool. Of those (n
who did use a formal method to screen. 76.9% (n = 10) used the PHQ-9 as a screening tool. As noted previously, the tools commonly used are designed to detect acute suicidal ideation as opposed to upstream suicide risk (Gaynes et al.). This is the case with the PHQ-9 which includes a single item asking about suicidal thoughts in the previous two weeks (Kroenke et al., 2001).

The second portion of assessing the current practice of screening for suicide risk was to identify the confidence of screening for suicide risk among the providers. In general the providers’ confidence both before and after the training was high (median 4 both pre and posttest). There was a slight increase in confidence noted, however, this question likely did not capture the intention of the query due to poor wording. The intent was to measure the providers’ confidence after watching the educational offering to reflect the confidence of screening for suicide using the INQ. A more appropriate question might have been “after watching the training, how confident are you in screening for suicide with the use of the INQ?” Three of the providers noted decreased confidence after the training. This result could be reflective of the providers’ greater understanding of the suicide pathway and a decrease in the confidence of current practice.

The third portion of assessing current practice of screening for suicide risk was to measure the confidence in the PHQ-9 as suicide risk screening tool. After the training the providers’ confidence in the PHQ-9 decreased significantly. This decrease in the confidence of the PHQ-9 could be a reflection of the providers’ confidence in the INQ as a more sensitive and specific measure of suicide risk versus that of the PHQ-9.

**IPTS concepts and knowledge.** The providers’ knowledge of the concepts of the IPTS were assessed both before and after receiving the training. In general, the
knowledge of the providers about the concepts of the IPTS increased after the training. The providers had a relatively high understanding of the influence on suicide risk for most of the concepts of the IPTS before the training. The exception to this was the concept of increased pain tolerance. This measure had a significant increase from a pretest median of 3 to a posttest median of 5. In fact, after the training the medians for all four concepts was 5. This indicates the providers believed each of the concepts of the IPTS had a very high influence on a person’s capacity for suicide. It is not clear why the providers’ understanding of the influence of the concepts on suicide risk was so high before the education. It could be they were influenced by the recruitment letter that spoke briefly of this influence. Another possibility is the concepts’ relationship to suicide risk could be intuitively obvious. It seems unlikely they were exposed to concepts of the theory prior to participating in the project but this remains a possibility. It was interesting to note that even with the high understanding before the training that the posttest scores still increased.

**INQ for screening and referral.** The final questions assessing the acceptability of the INQ related to the use of the INQ. The first question examined the providers’ confidence in the INQ as a suicide risk screening tool. In general, the providers had a high confidence in the INQ as a suicide screening tool as evidenced by a median of 4. This is an important result as it indicates a high likelihood the providers would use the INQ in clinical practice if it was made available to them. The other question related to the providers’ likelihood of making a mental health referral based on a positive screen on the INQ. The providers indicated a very high likelihood of referral as evidenced by the
median score of 5. Again, this is an important indication of acceptability of the INQ among the providers.

**Project Strengths and Weaknesses**

This project had a number of strengths. A major strength in the project was the focus on the identification of a tool that can better detect suicidal risk in a high risk population. The integration of multiple theories and frameworks to guide this project added to the strength. The integrated framework guided all aspects of this project from the identification of the problem, the literature review, the intervention design/implementation, and the evaluation. Another major strength of the project was the literature review. Multiple studies were identified and reviewed that supported the concepts of the IPTS, as well as, the validity of the INQ as a suicide risk screening tool. While there were a number of limitations identified in the individual studies, the overall trend in the literature of the ability of the concepts of the IPTS, as measured by the INQ, to detect suicide risk in a number of populations was a major strength. The design of the intervention also added strength to the project. The short video education integrated with the pre/posttest in a single format allowed the participants to access the project from any location. This design also allowed the busy providers to fit the training and questions into their schedule. The entire project could be completed by the participants in less than 20 minutes allowing for a higher response rate. Additionally, the participants could start and stop the training as their schedules permitted. This also allowed for greater flexibility for the respondents to participate in the training.

The design however may have limited the number of nurse practitioners recruited due to the multiple-step process of opting into the project. While the goal of matching the
number of physicians (n = 24) who would receive the training was achieved, only 33 out of over 1500 nurse practitioners who received the recruitment email opted into the project. This low opt-in percentage may have been influenced by the need for a multi-step recruitment process. Recruitment issues may also reflect a general hesitancy to participate in a project dealing with suicide. Further, the practitioners may have felt a project dealing with veterans would not pertain to their practices.

While the percentage of practitioners opting into the program was low (n = 33), the percentage of those completing the project was high (67%, n = 22) when compared to the physician (n = 24) group that participated (4.2%, n = 1). The lack of response among the physicians was a major limitation in this project. The original intent was to measure the acceptability of the INQ in a clinic where the suicide risk screening tool might be implemented for future use. The physicians were recruited by virtue of having worked at the clinic as opposed to the nurse practitioners who opted into the project voluntarily. The recruitment issues with the nurse practitioners, such as a perceived lack of veterans at the clinic or hesitancy to participate in a suicide related project, may have also influenced the participation of the physicians.

The reluctance of primary care practitioners to participate in suicide related projects may be due to a perception that even if someone at risk for suicide is identified, the available interventions are ineffective. In fact, the U.S Preventive Task Force (O'Connor, Gaynes, Burda, Williams, & Whitlock, 2013) notes a lack of effective evidence based treatments in their rationale for not recommending suicide screening. Some clinicians may also be worried about liability issues surrounding suicidal clients
and may seek to avoid identifying suicide risk (Linehan, Comtois, & Ward-Ciesielski, 2012).

Recent studies have demonstrated effective therapy for patients at risk for suicide. One study examined the use of brief Cognitive-Behavioral Therapy (CBT) in a military sample. This study demonstrated that high risk patients participating in the CBT were 60% less likely than the treatment as usual group to attempt suicide in a 24 month follow up period (Rudd et al., 2015). In addition to CBT, other interventions are available that have anecdotal evidence as protective factors such as veteran peer connection (Chapman & Ibrahim, 2015) or companion animals (Krause-Parello, 2015).

Another possibility for the low participation rate among the physicians is the involvement in other system improvement projects at the site. The need for additional project sites was noted as a weakness in the project prior to implementation. During the attempted recruitment of additional primary care sites within the organization, one of the site managers noted a heavy burden of current projects within all sites as the reason for not participating. Further she noted that if the project could be delayed by approximately 8 months the site would be willing to participate. Unfortunately a delay of this length was not possible either academically or financially for the facilitator. A similar burden of multiple projects was noted at the selected residency clinic which may have influenced to participation of the providers.

Given these barriers, particularly the absence of the onsite champion due to other professional and personal activities during the data collection period, the facilitator should have taken a more active role at the site. The use of an online teaching tool communicated through email relied on a passive means of recruitment. This recruitment
method was not effective in convincing the residency clinic providers of the importance of the project. The facilitator should have scheduled onsite informational meetings, even if that was done in small groups when providers were available. This would have allowed for face-to-face contact between the facilitator and potential respondents in order to convey critical information about the project and answer any questions or concerns. The facilitator relied too heavily on communication and recruitment by the leadership staff at the facility as opposed to communication with the staff, this was a mistake that is reflected in the poor participation rate among the providers of the residency clinic.

Participation, even in something that seems simple and convenient, still relies on personal contact and recruitment. In future change activities, the facilitator needs to pay more attention to the responsibility of making these contacts.

Another limitation of the project was the method of collecting veteran data at the site. No formal method of identifying a patient’s veteran status was available within the organization at the time of this project. The task of collecting these data was performed by the registration staff at the site as an addition to the normal duties of the day. The staff noted they were not always compliant with gathering the data dependent on office conditions. Since no means of verifying these data were available, the data collected are not likely to reflect the true number of veterans presenting to the site over the course of the project.

**Organizational Implications**

Two separate organizations were ultimately used during the course of this project. The original idea for this project was to implement the INQ into a primary care clinic in order to screen veterans for suicide risk. The PARIHS framework was used to assess the
primary care residency clinic for this purpose. The organization possesses strong leadership from the clinic level though the executive level with regard to receptiveness to change. The physician leader of the site readily agreed to be the champion of the project. The culture of the organization is also strong with regard to receptiveness to change. In fact, the primary care residency clinic is part of a large health system with an entire division dedicated to overseeing process improvement. The system also encourages scientific inquiry both from within and from outside academic organizations. Despite these strengths, it became apparent early that the organization did not have the systems in place to implement the INQ as planned.

First, no system was in place to formally identify veterans presenting to the clinic. The clinic did not identify veterans and thus the number of veterans being seen at the clinic in a typical month was unknown. Second, the clinic did not use a clear central referral for mental health, particularly with regard to veterans. This presented an ethical dilemma as veterans who screened positive on the INQ might not receive the proper follow up due to the absence of a veteran referral protocol. Finally, none of the staff at the clinic had previously been educated on the concepts of the IPTS or the INQ. For these reasons, the decision was made to refocus from formally implementing the INQ to instead providing education on the IPTS and INQ to the providers as well as measure the number of veterans presenting to the clinic over a 30 day period.

During the organizational assessment it became apparent this training would need to be done electronically to provide flexibility. The physicians at the site work a variety of schedules with some only working part time as preceptors at the site. In addition, all open academic time that could be used for onsite training had been scheduled out for
several months. The site was well suited for online training. The organization has its own online training tool though this was not used for this project due to multiple levels of system approval that would be needed. However, because the site uses an online learning tool, the providers should have been very familiar with this type of learning. Further, the leadership at the site was receptive to this type of training and provided the needed email addresses.

The timing of the project within the clinic may have been a large barrier to the participation of the physicians. As noted, the organization had other process improvement projects occurring within the clinic at the same time. In addition, the project occurred between May and July which is a time of transition for resident physicians. It is unknown how many of the resident physicians were graduating or transitioning to cross train in other services at the time. Further, the onsite champion of the project had a personal emergency that required him to travel out of the country for the majority of the project.

The state nurse practitioner organization was approached to participate in order to access the acceptably of the INQ among nurse practitioners. The primary care residency clinic did not employ any nurse practitioners at the time of the project and, as a doctor of nursing practice, it was important to include these practitioners in this project. The state-wide organization provided an efficient way to access enough nurse practitioners to match the potential number of physicians who would participate through the residency clinic. The leadership and culture of the organization is very receptive to participation in evidence-based practice inquiry. The organization’s leadership was approached through email and readily agreed to participate and to facilitate the email recruitment of the nurse practitioner members. The only barrier encountered with the organization was the
requirement to send the initial email through the organization which required a multi-step recruitment process. The organization otherwise allowed the project to proceed according to the established protocol.

**Implications for Future Implementations**

While the goal of this project was to assess the acceptability of the INQ as a suicide risk screening tool for veterans, the ultimate goal is the eventual implementation of the INQ as a suicide risk screening tool in primary care. In order for the INQ to be used in practice, more studies are needed. The current project demonstrated acceptability of the INQ as a suicide screening tool for veterans among a limited number of primary care providers. This is important as it suggests the providers would more likely use the tool and make referrals based on the outcome of the screening. This project also demonstrated several barriers to the implementation of the INQ into practice.

The first identified barrier was the lack of formal identification of veterans at the site. The registration staff was somewhat effective in capturing these data informally in this project. However, the staff admittedly missed asking about veteran status with an unknown number of patients depending on office conditions. Also, the information related to veteran status cannot be inputted into the patients’ Electronic Medical Record (EMR). Staff would need to be able to identify and enter veteran status into the EMR in order for any type of intervention involving veterans, including the INQ, to be used in a non-VHA setting. Further, a more detailed study should be conducted regarding the number of veterans presenting to a non-VHA primary care clinic. In addition to the number of veterans presenting, other characteristics such as primary complaint, type of insurance and VHA affiliation would be helpful in understanding this cohort.
Another major barrier identified during the project was the lack of participation among the physicians at the residency clinic. In order for the INQ to be implemented into a primary care setting, the providers of that setting would need to receive training similar to what was offered in this project. While the exact reasons for the low participation rate among the physicians is unknown, several possibilities have been noted including reluctance of participating in suicide related projects, perceived relevance of a veteran specific project and conflicts with other projects.

A future project seeking to educate the primary care providers in a clinic would need to overcome these barriers to achieve a higher percentage of participation. The project to identify veterans within the clinic might be conducted separately and prior to the educational project. The results of a veteran identification project could then be disseminated to the providers to demonstrate the number of veterans within the clinic. Further, a project should be undertaken to educate nurses and providers on the need for veteran-centric care addressing the vulnerabilities of this population in community (non-VHA) healthcare settings. This may help overcome the perception of a low relevance of veteran related projects among the providers. Additionally, the education related to the high risk of suicide among veterans could precede the INQ education. This may help overcome any reluctance in participating in a suicide related project. The relevance of the INQ for assessing suicide in non-veteran populations may facilitate participation as well.

The facilitator of such a future project would likely need a great deal of flexibility with timelines of the project. With the high number of system improvement projects underway, a future project might need to be delayed to allow for schedules to open, though in a large health system this might not be possible. Additionally while the training
method used in this project allowed for great flexibility among the providers, a more static onsite training method might provide for greater participation. This type of training might need to be performed at a time such as lunch when a majority of team members could gather. A future facilitator might need to have the financial resources to provide food at such a meeting to entice participation.

After the two projects of identifying veterans at the clinic and training primary care providers on the INQ have been achieved, other projects could be conducted to attempt to measure how the INQ impacts practice. It is unknown how the use of the INQ would impact the workflow of the providers. While the INQ-10 is short and easy to complete when done alone, the INQ combined with other screening tools the providers might be using, such as the PHQ-9, might prove to have a negative effect on the workflow of the primary care office. A possible solution to this problem, if it exists, is to combine the shorter versions of the tools into one usable screening tool. The INQ-2 is a newer version of the INQ (VanOrden et al., 2013). This shorter version of the INQ is designed for a more rapid screening process. By combining the INQ-2 with the PHQ-2, a more user friendly version of the two screening tools might be possible.

Recommendations for future studies include a multi-phase pilot program at a primary care clinic. The initial phase of the pilot would need to involve identifying veterans at the point of registration and integrating that information into the EMR. This would allow for studies to be conducted on this cohort including demographic and characteristic studies to better understand the population being served outside of the VHA. The health system that was used for this project has already started this process. Changes have been implemented within the system to require identification of veteran
status at some sites such as Emergency Departments (ED) and outpatient surgery centers. The goal is eventually to have this capability and requirement at all sites throughout the system.

The primary care sites need to identify a mental health referral point for future projects. The mental health providers who would be receiving referrals, based on the results of the INQ, would need to be educated on the same information given to the primary care providers and the acceptability of the INQ should be measured among these providers. This would ensure the mental health providers are familiar with the concepts of the IPTS and the INQ and know the reason the veteran is being referred for treatment. Additionally, staff such as Medical Social Workers (MSW) would need to receive training if they are going to be evaluating the veteran based on the INQ.

After the veterans at a site are identified and the acceptability of the INQ measured among the primary care providers and mental health providers, the INQ could be implemented to screen veterans for suicide risk. A future project using the INQ in practice should seek to answer the questions previously mentioned such as impact on workflow including the impact of the INQ when combined with other screening tools. Other variables of interest might be the number of referrals based on positive screens, availability of mental health appointments, length of time from referral to mental health appointment, number of patient self-harm incidents, and the willingness of the veteran to accept a mental health referral. Each primary care site is different and for this reason the results of such a study may not be generalizable to other primary care clinics. This means that in order for the INQ to be widely used in practice, individual sites and systems would likely need to implement similar pilots to answer these questions relative to the site.
Doctor of Nursing Practice (DNP) Roles

The journey to obtain the DNP is rigorous. The DNP prepared clinician is expected to be prepared for clinical practice at the highest level. In addition to clinical practice, the DNP is also expected to be an innovative leader in transforming health care through the translation of evidence into practice. The DNP student must demonstrate competency in the eight essentials of DNP practice in order to be prepared to lead these changes (American Association of Colleges of Nursing [AACN], 2006). The DNP scholarly project is meant as a platform for students to demonstrate their expertise in a chosen area of practice. The student should also demonstrate the attainment of the eight essentials of DNP practice through the project. Further, the project should act as a platform for future scholarly work (Moran, Burson, & Conrad, 2014). This scholarly project clearly demonstrates proficiency in the area of veteran suicide risk screening as well as serving as the beginning of more scholarly practice/innovation. The eight essentials of the DNP were also demonstrated through the completion of this project.

“Scientific Underpinnings of Practice” is the first essential for DNP practice (AACN, 2006). This essential involves the use of theory, nursing science and organizational information to improve health outcomes in a given population (Zaccagnini & White, 2011). This project used multiple theories and frameworks in order to organize and inform the various aspects of the project. The facilitator was able to integrate the theories, published literature and organizational information in order to inform the participants about the concepts of the theory and the validity of the screening tool.

“Organizational and Systems Leadership for Quality Improvement and Systems Thinking” is the second essential for the DNP (AACN, 2006). According to Moran et al.
(2014), the overall success of the DNP scholarly project is dependent on the leadership ability of the facilitator. This project required the analysis of two distinctly different organizations. The facilitator held meetings and communicated with the leadership of the two organizations on numerous occasions in order to design and implement this project. This required the facilitator to remain flexible and adapt the project to the strengths and weaknesses of the organizations in order to ensure the highest potential success.

“Clinical Scholarship and Analytical Methods for Evidence Based Practice” is the third essential of DNP practice (AACN, 2006). The facilitator used several conceptual frameworks in order to translate the evidence into a proposed practice method to improve patient outcomes. While the proposed intervention was not implemented into the system, this project demonstrated the potential effectiveness of the tool through literature review and the acceptability of the tool among primary care providers.

“Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care” is the fourth DNP essential (AACN, 2006). No patient care technology was utilized in this project. The facilitator did however use technology to facilitate the education of the providers and the outcome measures. The educational slides were created on Powerpoint software and converted into a movie format on Windows Movie Maker. This video was integrated into a pre/posttest using Survey Monkey and sent through email. Further the facilitator identified issues within the EMR at the site and suggested changes to identify veterans in the EMR to facilitate veteran status awareness among providers.

The fifth DNP essential is “Health Care Policy and Advocacy in Health Care” (AACN, 2006). Throughout this project the facilitator acted as an advocate for the
screening of veterans for suicide risk and veteran suicide prevention. This advocacy took numerous forms from communication with various health systems, speaking engagements with local veteran organizations and disseminating information through a variety of methods. The facilitator had the opportunity to present information on this project on a nationally syndicated, military/veteran themed, radio talk show. The facilitator advocated within the project site health system for the implementation of veteran-centric care. Since the conclusion of this project the health system has created a Veteran Support Service pilot program. In addition the system has made changes to their EMR to allow for the identification of veteran at select practice sites within the organization.

“Inter-Professional Collaboration for Improving Patient and Population Health Outcomes” is the sixth DNP essential (AACN, 2006). This project required collaboration between multiple disciplines. The facilitator interacted with numerous other disciplines during the course of the project including physicians, nurse practitioners, office managers, medical social workers, registration staff, institutional review board personnel and executive leadership. The implementation of the INQ as a suicide risk screening tool would require similar interactions among several professions in order to be successful.

“Clinical Prevention and Population Health for Improving the Nation’s Health” is the seventh DNP practice essential (AACN, 2006). This essential is exemplified throughout the entire project. The goal of this project was the acceptability of the INQ as a suicide risk screening tool in veterans in a non-VHA setting. The screening for suicide risk is a clinical prevention activity for the population of veterans. Veterans can be considered a vulnerable population given the increased risk of suicide compared to the
general population. In addition, many veterans who do not use the VHA for healthcare likely have significant barriers to receiving veteran-centric healthcare. One of the outcomes of this project was the increased knowledge and awareness of veterans among non-VHA primary care providers.

The final essential of DNP practice is “Advance Practice Nursing” (AACN, 2006). The role of the facilitator in this project did not involve functioning as a clinical advanced practice nurse. However, the facilitator used knowledge of an advance practice nurse to analyze the existing screening practices for suicide risk in non-VHA primary care. This knowledge also helped develop the flexible intervention technique for the providers. The facilitator used many of the roles of the advance practice nurse in completing this project. These roles include researcher, consultant/collaborator and educator.

The role of educator was a major focus for this project. The facilitator designed, developed and implemented an online education program. The facilitator also provided education to the office staff at the residency clinic regarding the importance of and process of collecting the veteran data. Despite the low participation rate among the physicians, those who did participate seemed to find some value in the education as evidenced by their email comments. Many of the NPs who participated emailed the facilitator expressing gratitude for the information. In fact many of those who emailed the facilitator stated they intended to change their practice regarding suicide risk assessment as a result of participating in the education.
Conclusion

Suicide is a national problem in the general population but especially among the nation’s military veterans. The purpose of this project was to determine if the INQ, which has shown effectiveness in detecting suicide risk, was acceptable to primary care providers for screening veterans in a non-VHA setting. The conceptual frameworks and theory used in this project were instrumental in guiding the various stages of this work. The IPTS was used to inform and guide the project with relation to all the aspects of suicidal risk including the transfer of knowledge on suicide to the participants. The empirical evidence from the literature review demonstrated both the need for an effective suicide risk screening tool and the effectiveness of INQ in that role.

The data obtained from the pre and posttests demonstrated that primary care providers, particularly nurse practitioners, accepted the INQ as a suicide risk screening tool for veterans. The data also demonstrated the providers that participated became better informed and sensitized to both the presence of veterans in a non-VHA setting and the risk of suicide in this population. These results, along with the strengths, weaknesses and organizational considerations, led to multiple suggestions for future scholarly work with the ultimate idea of full implementation of the INQ into practice. Throughout this project the facilitator was able to demonstrate the eight essentials of DNP practice. The development of these essentials through this project will hopefully aid the facilitator in future scholarly work with veteran-centric care and suicide risk screening.
Appendix A

The Multidimensional Nature of Thwarted Belongingness

Figure 4. Thwarted belongingness. Adapted from “The Interpersonal Theory of Suicide” by K.A. Van Orden et al., 2010, Psychological Review, 117, p. 43. Copyright 2010 by the American Psychological Association. Used with permission (see appendix T).
Appendix B

The Multidimensional Nature of Perceived Burdensomeness

Figure 5. Perceived burdensomeness. Adapted from “The Interpersonal Theory of Suicide” by K.A. Van Orden et al., 2010, Psychological Review, 117, p. 44. Copyright 2010 by the American Psychological Association. Used with permission (see appendix T).
Appendix C

The Multidimensional Nature of Acquired Capability

Figure 6. Acquired capability for suicide. Adapted from “The Interpersonal Theory of Suicide” by K.A. Van Orden et al., 2010, Psychological Review, 117, p. 45. Copyright 2010 by the American Psychological Association. Used with permission (see appendix T).
Appendix D

Causal Pathway of Suicidal Behavior

Figure 7. Suicide causal pathway. Adapted from “The Interpersonal Theory of Suicide” by K.A. Van Orden et al., 2010, Psychological Review, 117, p. 46. Copyright 2010 by the American Psychological Association. Used with permission (see appendix T).
Appendix E

Summary of Frameworks

Figure 8. Integrated Frameworks
Appendix F

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Appendix G

Interpersonal Needs Questionnaire

The following questions ask you to think about yourself and other people. Please respond to each question by using your own current beliefs and experiences, NOT what you think is true in general, or what might be true for other people. Please base your responses on how you’ve been feeling recently. Use the rating scale to find the number that best matches how you feel and place the number on the line in front of the item. There are no right or wrong answers: we are interested in what you think and feel.

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
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<tbody>
<tr>
<td>0</td>
<td>Not at all</td>
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<tr>
<td>1</td>
<td>Somewhat true for me</td>
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<tr>
<td>2</td>
<td>Very True true for me</td>
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_____ 1. These days the people in my life would be better off if I were gone.
_____ 2. These days the people in my life would be happier without me.
_____ 3. These days I think my death would be a relief to the people in my life.
_____ 4. These days I think the people in my life wish they could be rid of me.
_____ 5. These days I think I make things worse for the people in my life.
_____ 6. These days, I feel like I belong.
_____ 7. These days, I am fortunate to have many caring and supportive friends.
_____ 8. These days, I feel disconnected from other people.
_____ 9. These days, I often feel like an outsider in social gatherings.
_____ 10. These days, I am close to other people.

Hi Jeff,

You have my permission to use the Interpersonal Needs Questionnaire (INQ), with proper citation, as part of your scholarly project. In addition, you have permission to duplicate the INQ in your dissertation. I understand this project will be published on Scholar Works. To my knowledge, no other individuals or entities hold a copyright to the INQ.

Best,
Kim

--
Kim Van Orden, Ph.D.
University of Rochester Medical Center
300 Crittenden Blvd, Box Psych
Rochester, NY 14642
P: 585-275-5176; F: 585-276-2065
Office # 4.9246
Kimberly_vanorden@urmc.rochester.edu
Appendix I

Dr. C. Bryan Permission Letter

Dear Jeff,

You have my permission to use the Interpersonal Needs Questionnaire -10 (INQ -10), with proper citation, as part of your scholarly project. In addition, you have permission to duplicate the INQ - 10 in your dissertation. I understand this project will be published on Scholar Works. To my knowledge, no other individuals or entities hold a copyright to the INQ - 10.

Craig J. Bryan, PsyD, APBP
Executive Director, National Center for Veterans Studies
Assistant Professor, Department of Psychology
The University of Utah
260 S. Central Campus Dr., Room 205
Salt Lake City, UT 84112

Phone: 801-587-7978
Email: craig.bryan@utah.edu
Website: www.veterans.utah.edu
Appendix J

Pre-Test Primary Care Provider Questionnaire for INQ Acceptance Project

1. What is your education/discipline type?
   - Physician
   - Physician Assistant (PA)
   - Nurse Practitioner (NP)

2. How many years have you been in practice?
   - 1-5
   - 6-10
   - 11-15
   - 16-20
   - > 20

3. Are you a veteran?
   - Yes
   - No

4. How many veterans do you think are seen as patients at your site in a month?
   - 0-10
   - 11-20
   - 21-30
   - 31-40
   - > 40

5. At how much risk for suicide are veterans compared to non-veterans?
   - 1
   - 2
   - 3
   - 4
   - 5
   - Much lower
   - Lower
   - Same
   - Higher
   - Much higher

6. How confident are you in assessing patients for suicide risk?
   - 1
   - 2
   - 3
   - 4
   - 5
   - Not at all
   - Little
   - Somewhat
   - Much
   - Very much

7. How confident are you that the PHQ-9 identifies patients at risk for suicide?
   - 1
   - 2
   - 3
   - 4
   - 5
   - Not at all
   - Little
   - Somewhat
   - Much
   - Very much
8. How much influence does a person’s sense of belonging have on their risk of suicide?

1 2 3 4 5
Not at all Little Somewhat Much Very much

9. How much influence does a person’s feeling they are a burden on others have on their risk for suicide?

1 2 3 4 5
Not at all Little Somewhat Much Very much

10. How much influence does a person’s reduced fear of death have on their ability to take their own life?

1 2 3 4 5
Not at all Little Somewhat Much Very much

11. How much influence does a person’s tolerance of pain have on their ability to take their own life?

1 2 3 4 5
Not at all Little Somewhat Much Very much

12. Are you currently using a suicide screening tool in practice?

Y N

13. If yes, what tool are you using? ____________________
Post-Test Primary Care Provider Questionnaire for INQ Acceptance Project

1. How many veterans do you think are seen as patients at your site in a month?

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2. At how much risk for suicide are veterans compared to non-veterans?

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<td>Much lower</td>
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3. How confident are you in assessing patients for suicide risk?

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4. How confident are you that the PHQ-9 identifies patients at risk for suicide?

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5. How much influence does a person’s sense of belonging have on their risk of suicide?

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6. How much influence does a person’s feeling they are a burden on others have on their risk for suicide?

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</table>
7. How much influence does a person’s reduced fear of death have on their ability to take their own life?

1 2 3 4 5
Not at all Little Somewhat Much Very much

8. How much influence does a person’s tolerance of pain have on their ability to take their own life?

1 2 3 4 5
Not at all Little Somewhat Much Very much

9. How confident are you that the INQ-10 identifies patients at risk for suicide?

1 2 3 4 5
Not at all Little Somewhat Much Very much

10. How likely are you to make a referral to mental health based on a positive screen on the INQ-10?

1 2 3 4 5
Not at all Little Somewhat Much Very much
Greetings,

Suicide is the 10th leading cause of death in the United States and certain subpopulations such as veterans are at an even greater risk. It is estimated that roughly 22 veterans everyday are dying from suicide. This often occurs shortly after meeting with a primary care provider. While the VA has an integrated program for suicide prevention in place, only about 24% of all veterans are treated at the VA and a portion of those are also seen in the community, possibly by you. You are receiving this email because your site (25 Michigan, Spectrum Health primary care residency clinic) is participating in a project regarding screening for suicide risk.

You are being asked to participate in this project because as primary care providers you are on the front line of screening for suicide risk in the community. I hope you will participate as you are extremely important in helping evaluate the usefulness of this educational offering to increase the assessment of suicide risk in the primary care setting. Your site is ideal for this project as it is the training site for the future of primary care in our community.

In the next several days you will be receiving another email containing a link to a pre-test and a short educational course (approximately 30 minutes) regarding suicide and suicide among veterans. After you complete the educational offering you will be asked to complete a short survey (approximately 5 minutes) regarding the content of the
education. You will have 30 days from the time of that email to complete the education and survey. An email will be sent to you in approximately 2 weeks as a reminder to participate. The project will introduce you to the Interpersonal Theory of Suicide and Interpersonal Needs Questionnaire (INQ). The INQ has demonstrated an ability to more accurately screen for suicide risk in multiple populations. In addition to the educational piece in which you will be asked to participate, your site will also be counting the number of patients attending your clinic who have prior military service over the next 30 days.

I am hopeful you will take the time to participate in this project and answer a few questions regarding your participation. You are under no obligation to participate and not participating will not reflect poorly on you. The project carries no risk other than the time commitment required to participate. Your participation will be confidential and all data collected will be stored in accordance with strict data security measures.

My name is Jeff Bird; I am a Doctor of Nursing Practice (DNP) student at GVSU. I will be the principal investigator for this project. My dissertation chair is Dr. Andrea Bostrom. bostroma@gvsu.edu

I would like to thank you in advance for your willingness to help with this important project.

Sincerely,
Jeff Bird, DNP(c), RN
Birdjef@mail.gvsu.edu
616-886-7606
Appendix M

Email to MiCNP Members

Greetings,

Suicide is the 10th leading cause of death in the United States and certain sub-populations such as veterans are at an even greater risk. It is estimated that roughly 22 veterans everyday are dying from suicide. This often occurs shortly after meeting with a primary care provider. While the VA has an integrated program for suicide prevention in place, only about 24% of all veterans are treated at the VA and a portion of those are also seen in the community, possibly by you. You are receiving this email because your professional organization (Michigan Council of Nurse Practitioners) is participating in a project regarding screening for suicide risk.

You are being asked to participate in this project because as primary care providers you are on the front line of screening for suicide risk in the community. I hope you will participate as you are extremely important in helping increase assessment of suicide risk in the primary care setting.

If you choose to participate, you will be receiving another email containing a pre-test and a short educational course (approximately 20 minutes) regarding suicide and suicide among veterans. After you complete the educational offering you will be asked to complete a short survey (approximately 2 minutes) regarding the content of the education. You will have 30 days from the time of that email to complete the education.
and survey. An email will be sent to you in approximately 2 weeks as a reminder to participate. The project will introduce you to the Interpersonal Theory of Suicide and Interpersonal Needs Questionnaire (INQ). The INQ has demonstrated an ability to more accurately screen for suicide risk in multiple populations.

I am hopeful you will take the time to participate in this project and answer a few questions regarding your participation. You are under no obligation to participate and not participating will not reflect poorly on you. The project carries no risk other than the time commitment required to participate. Your participation will be confidential and all data collected will be stored in accordance with strict data security measures. If you choose to participate simply click on this link Birdjef@mail.gvsu.edu and reply “yes” in the subject line of the email. This will allow me to send you an email to gain access to the project. All emails will be deleted after the return email is sent.

My name is Jeff Bird; I am a Doctor of Nursing Practice (DNP) student at GVSU. I will be the principal investigator for this project. My dissertation chair is Dr. Andrea Bostrom. bostroma@gvsu.edu

I would like to thank you in advance for your willingness to help with this important project.

Sincerely,

Jeff Bird, DNP(c), RN
Birdjef@mail.gvsu.edu
616-886-7606
Appendix N

Education Outline

*Set to Music “He Aint Heavy, He’s My Brother” performed by Michael Peterson*

- Screening for suicide risk in veterans in non-VA primary care clinics

- **Background of Suicide**

  - Suicide is a national problem and is the 10th leading cause of death in the United States.
  
  - Roughly 8 million adults report suicidal thoughts each year
  
  - Nearly 1 million adults attempt suicide each year

- **Background**

  - A veteran dies by suicide every 60-80 minutes.
  
  - Between the years 2005 and 2007, the suicide rate for veterans increased 26% in the general population.
  
  - Between fiscal years 2001 and 2009, VHA enrolled veterans killed themselves at an average rate of 36.4/100,000 which is well above the gender and age matched non veteran rate of about 19/100,000.

- Why is this important to you?

  - The VA only provides health care to approximately 24% of the roughly 22 million veterans in the United States

  - These numbers only include honorably discharged veterans.

  - That means that roughly 76% of veterans and all of those who served but received an “other than honorable discharge” receive their care in the community, **with you**.
Case Study

Steven, a 28 year old male, presented to his community primary care provider with a complaint of abdominal cramping and diarrhea for the last 4 days.

He stated this had happened before and these symptoms seem to come and go.

He was diagnosed with irritable bowel syndrome and treated with home medication.

Case Study

He was also given a depression screening with the PHQ-9 as part of the routine process of the office.

He was screened as low risk with the PHQ-9.

He also denied suicidal thoughts or plans during the provider’s history.

Case Study

40 days after his appointment Steven, dressed in his military dress uniform, took his own life.

This case, while fictional, is similar to stories that are played out every week across the United States.

In fact, veterans are dying by suicide at a rate of roughly 8000 times per year (18 -22 per day).

Current Practice

Current practices for screening for suicide risk varies from practice to practice.

Currently the screening generally falls into two categories.

- Screening for risk factors for suicide such as depression using tools such as the PHQ-9.
• Screening for current suicidal ideation “I want to hurt myself” and suicidal intent “I have a plan to hurt myself”

• Does the Current Screening work?

• A 2010 study by Denneson et al looking at veterans who had committed suicide found that 63% had a primary care contact in the year before their death.

• The mean time from contact to death was 42 days.

• Of the patients who were screened for suicidal ideation 72% screened negatively.

• Does the Current Screening work?

• Tools currently in use at the primary care level have been shown to be unreliable.

• The United States Preventative Task Force does not recommend for or against screening for suicide at the primary care level for this reason.

• Is there something better?

• The answer is YES !!

• A new tool called the **Interpersonal Needs Questionnaire (INQ)** has shown great promise in studies as a better tool for screening suicide risk.

• It is based on a relatively new theory called the Interpersonal Theory of Suicide.

• “He ain’t heavy, he’s my brother” Performed by Michael Peterson
  http://www.michaelpetersononline.com/

**End Music and Begin Narration**

• Thwarted Belongingness

• Perceived Burdensomeness

• Acquired capability for suicide
The Proximal Causal Pathway to Suicide

The Interpersonal Needs Questionnaire

The INQ-10 is the shortest version of the tool.

It is a self-administered tool, patients fill it in while waiting for their appointment.

Items 1-5 represent the perceived burdensomeness subscale.

Items 6-10 represent the thwarted belongingness subscale.

The Interpersonal Needs Questionnaire

INQ -10

The following questions ask you to think about yourself and other people. Please respond to each question by using your own current beliefs and experiences, NOT what you think is true in general, or what might be true for other people. Please base your responses on how you’ve been feeling recently. Use the rating scale to find the number that best matches how you feel and place that number on the line before the item. There are no right or wrong answers: we are interested in what you think and feel.

0
Not at all
for me

1
Somewhat
true for me

2
Very True
for me

1. These days the people in my life would be better off if I were gone.
2. These days the people in my life would be happier without me.
3. These days I think my death would be a relief to the people in my life.
4. These days I think the people in my life wish they could be rid of me.
5. These days I think I make things worse for the people in my life.
6. These days, I feel like I belong.
7. These days, I am fortunate to have many caring and supportive friends.
8. These days, I feel disconnected from other people.
9. These days, I often feel like an outsider in social gatherings.
10. These days, I am close to other people.

Scoring the INQ-10

The INQ is very easy to score.
A score of >0 on items 1-5, 8 and 9 is a positive score

A score of <2 on items 6, 7, 10 (reversed score) is a positive score

perceived burdensomeness subscale

In a sample of military personnel Bryan 2011 found:

- The perceived burdensomeness subscale has a sensitivity of .923 and a specificity of .736
  - A positive score was associated with a 18% likelihood of suicidal ideation.
  - A negative score was associated with a 0.6% likelihood of suicidal ideation.

thwarted belongingness subscale

- The thwarted belongingness subscale has a sensitivity of .923 and a specificity of .701
  - A positive score was associated with a 16% likelihood of suicidal ideation.
  - A negative score was associated with a 0.7% likelihood of suicidal ideation (Bryan 2011).

The Interpersonal Needs Questionnaire

- A positive screen on the INQ-10 was associated with a 1 in 5 chance of suicidal ideation. A negative screen on the INQ-10 was associated with a 1 in 200 chance of suicidal ideation (Bryan, 2011).

The Interpersonal Needs Questionnaire

- The INQ and the Theory it is based on have been tested in over 20 studies in a variety of populations.

- The overall findings of these studies have demonstrated that thwarted belongingness and especially perceived burdensomeness are better predictors of suicidal risk than screening for any other distal risk factor including depression.

Conclusion
• Suicide (the overall 10th leading cause of death and a higher rate in certain groups like veterans) can be difficult and scary to screen for at the primary care level.

• The IPTS proposes a pathway for suicide that increases the understanding of how a person progresses through the various stages of suicidal thought.

• Thwarted belongingness and perceived burdensomeness provide an area for screening that account for multiple risk factors that would be impossible to screen for during a primary care appointment.

• The validity of the INQ should provide primary care providers with confidence in screening for suicide risk during their appointments.

• The ease of scoring and the self-administered nature of the INQ fit well with a busy primary care appointment and should fit well within the normal flow of an appointment.
Hello,

You received an email containing a short education course regarding screening for suicide risk at the primary care level on ________. This email is a reminder to please click on the link below to complete the important piece of education. If you have any questions regarding this project please feel free to contact me.

Sincerely,

Jeff Bird, DNP(c), RN
Birdjef@mail.gvsu.edu
616-886-7606
Appendix P

Veteran Tracking Sheet

Date ______________

Please ask each patient if they have prior military service (regardless of discharge type)
Circle Y for prior military service N for no. Place a line through both if refuse to answer
- Y—N. Each line represents a new patient. If you miss a patient please leave that
line blank. If you need a second sheet please write “Sheet #2” after the date.

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Your site is participating in a project to identify how many people with military service are patients at the residency clinic. Over the course of 30 days you will be asked to attempt to have the patients checking in identify if they ever served in the military. For the purpose of this study it does not matter how long they served or the nature of their discharge, simply that they did or did not serve. A script is provided below as a way to present the question to the patient.

“We are conducting a short study to get an idea of how many military veterans we are treating here. We are doing this in an attempt to better serve those who served the country. Your answer will not be associated with you in anyway and all the responses are confidential. Can you tell me if you ever served in the U.S. Military?”

This script is also included on a separate sheet of paper that can be kept at the desk. You are also being provided with a tracking sheet. On the tracking sheet you will see slots with Y and N. In order to record the answer, simply circle the appropriate answer. If the person refuses to answer simply put a line between both the Y and N. The sheets are pre-dated for the course of the project. At no time should personal information from the patient be placed on the sheet.
Appendix R
Grand Valley State University Letter of Determination

9 May 2015

Mr. Jeff Bird
10878 Mary Elizabeth Ct
Allendale, Michigan
49401

Dear Mr. Bird,

Upon review of the aims and description of the project you are completing for your dissertation entitled, “Acceptability of the Interpersonal Needs Questionnaire as a Suicide Risk Screening Tool for Veterans in a Non-Veterans Health Administration Primary Care Clinic” it has been determined that it does not fit the U.S. Dept. of Health & Human Services’ definition of research. This definition states that research is, “...a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge...” (Code of Federal Regulations, SuPBart A, Section 46.102 (d), 2005, 2009).

The determination of this project as not being research has been based on the materials submitted to me. Because it is not research, submission to GVSU’s Human Research Review Committee (HRRC) is not necessary. You may proceed with this project.

As you move forward, you are cautioned that your project should not be referred to as research when you discuss it with others. Should you change the aims and activities of your project such that it would then meet the definition of research as quoted above, please cease any contacts with potential human subjects until such time as you submit the project protocol to the HRRC and receive the committee’s approval to proceed.

Good luck with your project. Cordially,

Cynthia P. Covia
Professor & Associate Dean, Nursing Research & Faculty Development
Appendix S

Clinic Site IRB Letter

May 4, 2015

Jeff Bird DNP(c), RN
Spectrum Health 100 Michigan St NE
Grand Rapids, MI 49503
SH IRB#: 2015-089

PROTOCOL TITLE: ACCEPTABILITY OF THE INTERPERSONAL NEEDS QUESTIONNAIRE AS A SUICIDE RISK SCREENING TOOL FOR VETERANS IN A NON VETERANS HEALTH ADMINISTRATION PRIMARY CARE CLINIC

SPONSOR: Investigator

Dear Mr Bird,

On May 4, 2015, the above referenced project was reviewed. It was determined that the proposed activity does not meet the definition of research as defined by DHHS or FDA.

Therefore, approval by Spectrum Health IRB is not required. This determination applies only to the activities described in the IRB submission and does not apply if changes are made. If changes are made and there are questions about whether these activities are research involving human subjects, please submit a new request to the IRB for a determination.

Please be advised, this determination letter is limited to IRB review. It is your responsibility to ensure all necessary institutional permissions are obtained prior to beginning this project. This includes, but is not limited to, ensuring all contracts have been executed, any necessary Data Use Agreements and Material Transfer Agreements have been signed, documentation of support from the Department Chief has been obtained, and any other outstanding items are completed (i.e. CMS device coverage approval letters, material shipment arrangements, etc.).

Your project will remain on file with the Office of the IRB, but only for purposes of tracking research efforts within the Spectrum Health system. If you should have questions regarding the status of your project, please contact the Office of the IRB at 616-486-2031 or email irb@spectrumhealth.org.

Sincerely,

Jeffrey Jones MD
Chair, Spectrum Health IRB
Appendix T

American Physiological Association Permission Letter

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