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The University of Southern Mississippi

INTERPERSONAL NEEDS AND SUICIDE: STRENGTHENING MEASUREMENT  
IN AN OFFENDER POPULATION

by

Rose Angeline Gonzalez

Abstract of a Dissertation  
Submitted to the Graduate School  
Of The University of Southern Mississippi  
In Partial Fulfillment of the Requirements  
For the Degree of Doctor of Philosophy

August 2014

## ABSTRACT

### INTERPERSONAL NEEDS AND SUICIDE: STRENGTHENING MEASUREMENT IN AN OFFENDER POPULATION

by Rose Angeline Gonzalez

August 2014

A disproportionate number of prisoners suffer from mental illness and engage in suicidal ideation or behaviors when compared to community adults (Tartaro & Lester, 2005; Torrey, Kennard, Eslinger, Lamb, & Pavle, 2010), placing a heavy burden on the correctional system for both housing and mental health treatment (Baillargeon et al., 2009). The Interpersonal-Psychological (IP) theory has been offered as a comprehensive framework for understanding and evaluating suicide risk (Joiner, 2005). The theory delineates two components that underlie both suicidal ideation and suicide behaviors, called interpersonal needs and acquired capability (Joiner, 2005). Although this theory could offer a clinically useful method for evaluating suicide risk in offenders, it has not yet been studied in this population. As such, the current study aimed at examining the validity of the measure of interpersonal needs in an incarcerated sample of adult men ( $n = 399$ ) as well as determining ethnic differences and cutoff scores for clinical purposes in assessing suicidal ideation. The findings indicate that the two-factor structure remains valid with some modification of the measure, and that no ethnic differences exist on the INQ in the sample. Additionally, a cutoff value on the INQ was derived in assessing suicidal ideation. Clinical guidelines for the utilization of the INQ, as well as limitations and future directions, will be explored.

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The University of Southern Mississippi

INTERPERSONAL NEEDS AND SUICIDE: STRENGTHENING MEASUREMENT  
IN AN OFFENDER POPULATION

by

Rose Angeline Gonzalez

A Dissertation  
Submitted to the Graduate School  
of The University of Southern Mississippi  
in Partial Fulfillment of the Requirements  
for the Degree of Doctor of Philosophy

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## CHAPTER I

### INTRODUCTION

Currently, there are approximately 1,600,000 incarcerated individuals in the United State prison system (Carson & Sabol, 2012). Of the total prison population, studies estimate a disproportionate number of prisoners suffer from mental illness, with estimates varying between 15% and 20% (Torrey et al., 2010). The likelihood of a prisoner being diagnosed with at least one mental health condition is 50% (Baillargeon et al., 2009). Other studies posit that individuals with serious mental illness (SMI), such as schizophrenia, bipolar disorder, or major depression, are 1.5 times more likely to enter the correctional system than a psychiatric hospital (Adams & Ferrandino, 2008). Baillargeon and colleagues (2009) posit that the nation-wide deinstitutionalization of mental illness has exacerbated the problem, resulting in even more mentally ill individuals entering correctional facilities. In sum, an exceedingly heavy burden is now placed on the criminal justice system to address and manage the mental health needs of offenders.

Mentally ill offenders are at higher risk for re-offending than their non-mentally ill counterparts (Adams & Ferrandino, 2008). The most commonly diagnosed conditions for offenders include depression, bipolar, schizophrenia, substance disorders, and personality disorders (Adams & Ferrandino, 2008). Beyond this increased risk for recidivism, those inmates with mental health diagnoses cost more to house per day on average, tend to have longer sentences, and present more behavioral problems for staff to manage (Torrey et al., 2010).

Suicide is a pertinent issue in the field of psychological literature; however, discrepant utilization of suicide-related nomenclature has been a shortcoming, causing

confusion and a lack of consistency (e.g., Silverman, Berman, Sanddal, O'Carroll, & Joiner, 2007). The terminology used in this paper is consistent with the revised nomenclature presented by Silverman et al. (2007), which differentiates suicide ideations, communications (e.g., notes), and behaviors. The construct of self-directed violence captures both suicidal behaviors and self-harm behaviors. The term suicide behaviors involve intent to die, whereas non-suicidal self-directed violence (sometimes referred to as self-harm) lacks intent to die (Crosby, Ortega, & Melanson, 2011). Suicidal ideation refers to the cognitions, or thoughts of death, involving either no intent or intent, and ranging from casual to persistent. Suicidal behaviors are behaviors motivated by intent to die. Of these behaviors, suicide attempts involve (a) self-initiated behavior that could cause injury, (b) intent to end one's life and (c) and a non-fatal outcome. A lethal attempt (or completed suicide) indicates that the outcome of such suicide behavior is death (Van Orden, Cukrowicz, Witte, Braithwaite, Selby, & Joiner, 2010).

An extreme ramification of mental illness is suicide. Starkly contrasted with the general population where suicide accounts for 11 deaths per 100,000 (Center for Disease Control and Prevention [CDC], 2009), suicide accounts for 280 deaths per 100,000 prisoners (Tartaro & Lester, 2005) and is the leading preventable cause of death among offenders (Tropodi & Bender, 2006). Other researchers have posited that offenders are between 3 to 9 times more likely to attempt suicide than those in the general public (Tripodi & Bender, 2006). Those housed in either state prisons or local jails are at higher risk for suicide than those housed in federal prisons (Way, Miraglia, Sawyer, Beer, & Eddy, 2005). Similarly, offenders who are convicted of violent crimes are more at risk

for suicide than those offenders who are convicted of non-violent crimes (Way et al., 2005).

The general topography of prison suicide has been elucidated by research studies that examine numerous risk factors for prison suicide. In sum, prisoners at higher risk for suicide are not a homogeneous group (Magaletta, Patry, Wheat, & Bates, 2008). Those convicted of more violent crimes demonstrate a higher risk of attempted and completed suicide (Way et al., 2005). Offenders who engage in suicide attempts often refer to legal problems (28%) and inter-inmate conflicts (23%) as sources of stress that lead to such behavior (Salive, Smith, & Brewer, 1989). Inmates who are newly sentenced and those with longer sentences tend to demonstrate higher levels of suicide. Although those serving a life sentence comprise only 1% of the prison population (Carson & Sabol, 2012), they account for nearly 25% of suicide completers according to Salive and colleagues (1989).

The literature on prison suicide points to the prison environment itself as deleterious, likely increasing suicide risk among those subject to it. The prison environment is considered a major stressor to those incarcerated. Implicit to many prison settings are over-crowding, fear of isolative punishments, and poorly controlled gang violence, while many inmates entering prisons experience a sudden loss of social support (Adams & Ferrandino, 2008; Galanek, 2013). Tripodi and Bender (2006) state, “The jail environment embodies fear, distrust, lack of control, isolation, and shame and is often dehumanizing” (p. 40). This type of setting can easily cause a sense of hopelessness, likely the impetus for the increased risk of suicide during the first 24 hours of being placed in custody and in the first 24 hours of being relocated to a different prison facility

(Hayes, 1995). Similar to psychiatric patients who largely attempt suicide when left alone while in custody, the majority of inmates (76%-97%) in two prison studies attempted suicide in single cell settings (Anno, 1985). Similarly, those offenders placed in isolation cells, which are described as disciplinary confinement cells allowing one hour of time outside the cell, were overrepresented in the sample of suicide completers (Daniel & Fleming, 2006).

Demographic differences in suicide have been consistently evidenced across age, gender, and ethnicity in non-offenders. Amongst the general population, it appears that suicide risk is high during adolescence and early adulthood and then increases again during older age (Quinlan-Davidson, Sanhueza, Espinosa, Escamilla-Cejudo, & Maddaleno, 2014). Individuals aged 10-24 years are at a ten-fold increased risk for suicide, which is the third leading cause of death for that age group (Center of Disease Control and Prevention, 2010). Interestingly, a recent trend among middle-aged (e.g., 35-64 years of age) adults has been recently found (Chakravarthy, Frumin, & Lotfipour, 2013). From 1999 to 2010, the suicide rate for this age group has increased by almost 29%, with the largest increases found among men between the ages of 50 and 59 years and women between the ages of 60 and 64. An assessment of factors attributed to this trend point to the economic crisis in the U.S. and widespread availability of prescription opiate painkillers (Chakravarthy, Frumin, & Lotipour, 2013).

Studies on suicide among males, specifically, are largely consistent: The risk for suicide increases with age, with men aged 65 and above carrying a doubled risk of suicide than their middle-aged counterparts (Carson & Sabol, 2012; Shah, 2007). Some causal factors for this trend have been explored and include a sense of burdensomeness,

geriatric depression, limited social contact, and an increase in medical problems (Jahn, Cukrowicz, Linton, & Prabhu, 2011, Osvaldo et al., 2012). Interestingly, women carry the greatest risk for suicide during middle age, as their risk for suicide decreases at the age of 65 (Carson & Sabol, 2012).

With regard to gender trends more broadly, research findings consistently indicate that women are more likely to attempt suicide than men, but men are more likely to complete suicide than women (CDC, 2009; Moscicki, 1994). In fact, suicide completion rates are higher among men than women in every age category (Quinlan-Davidson et al., 2014). For example, in 2009, 26 out of every 100,000 men between the ages of 25 and 64 completed suicide, whereas only 7 of every 100,000 women between the ages of 25 and 64 years did (Carson & Sabol, 2012). This trend is partly attributed to chosen method of suicide. Men, on average, choose more lethal means, such as firearms, whereas women are more likely to choose less-lethal methods, such as poisoning, jumping, drug overdose, and suffocation (CDC, 2010; Quinlan-Davidson et al., 2014).

An abundance of literature has uncovered pervasive and significant ethnic disparities in the rate of suicide in the general population across many countries. While ethnic minorities are more likely to face psychosocial stressors that may cause mental health problems, such as racism, socio-economic strain, and health concerns, their suicide rate is half that of Whites across the Americas, Europe, and Asian countries (Shah, 2007). For example, according to the National Center for Injury Prevention and Control (NCIPC, 2007), there are approximately 13 suicides per every 100,000 of Whites in the U.S. general population, while there are nearly 5 per every 100,000 of Blacks.

Blacks in the U.S. demonstrate low overall levels of suicide, with specific subgroups of Black males evidencing an upward trend in suicide from the 1980s to the 1990s (i.e., age 15-24; McIntosh, 2010). With regard to underlying mechanisms for such significant disparities in suicide behaviors between Blacks and Whites, researchers believe that religious and social factors are major deterrents for suicide in Black communities (McIntosh, 2010). More specifically, the stigma of suicide is a highly salient factor in Black communities, and many Black communities place a strong emphasis on religious beliefs and church-based social groups. Thus, not only is suicide stigmatized in Black communities, but it is also tied to the belief that suicide results in damnation and societal shame for family members left behind.

Research on Black culture has highlighted the importance of intra-group cohesion and ties to family, church, and other social structures, such as friendship networks, as protective factors commonly found in Black communities in the U.S. (Gutierrez, Rodriguez, & Garcia, 2001). Further, it has been proposed that Blacks are less susceptible to suicide behaviors because of a decreased likelihood of suicidal ideation, with research on college students evidencing a lower level of reported suicide ideation for Black students that would propagate self-injurious behaviors when compared to their White and Hispanic counterparts (Gutierrez et al., 2001). Thus, the data seems to suggest both social and psychological bases for this discrepancy in suicide.

Despite data that indicates that Blacks exhibit lower levels of suicide overall, they also seem to experience unique risk factors for suicide. Acculturation rate has been implicated as a factor that increases risk for suicidal ideation, suggesting that acculturation may represent a movement away from traditional protective barriers, such

as family/societal oriented values and traditions (Castle, Conner, Kaukeinen, & Tu, 2012). Other risk factors include hopelessness and chronic stress. Hirsch, Visser, Chang, and Jeglic (2012) delineated that hopelessness acts as a unique moderator on the relationship between depression and suicide behavior in Blacks from a diverse college sample. Specifically, those Black college students who reported feelings of hopelessness and depression were at greater risk for suicide, while hopelessness did not relate to suicide for Whites when trait hope was also being measured. The authors posit that Blacks may experience a unique etiology for suicide, where hopelessness is a key factor that trait hope does not buffer against as it does for Whites. Further, they add that young Blacks are more likely to experience chronic stress caused by environmental threats, such as racism and prejudice that may result in an increased vulnerability to hopeless thinking styles (Hirsch et al., 2012).

Hispanics report similar suicide rates as Blacks: For every 100,000 Hispanics in the U.S., approximately five complete suicide (CDC, 2009). Mexican-Americans, in particular, are the most susceptible subgroup of Hispanics to have unmet mental and physical health needs, which potentially provides a causal mechanism for this group's high rate of suicide (Leong & Leach, 2007).

Data evidencing lower risk of suicide for non-Whites is in direct opposition with the significant amount of research on the lower levels of access to healthcare and health disparities of these populations in the U.S. (Morgan, Kuramoto, Emmet, Stange, & Nobunaga, 2014; Piccolo, Yang, Bliwise, Yaggi, & Araujo, 2013). Research has shown that economic adversity and low socio-economic status is related to suicide and poor mental health; however, while Whites tend to have a higher socio-economic status and

access to care, their suicide rates continue to be higher than non-Whites (Page et al., 2014). To understand this paradox, researchers have pointed to the possibility that Whites have a natural susceptibility to suicide with less pervasive and salient societal protective factors related to the White culture of autonomy and independence (e.g., social connectedness; Castle et al., 2012). On the other hand, Lincoln, Taylor, Chatters, and Joe (2012) and Rockett et al. (2010) posited that under-reporting and autopsy misclassification may be driving down the official suicide rate among Blacks. This is likely due to the stigma of psychiatric conditions and suicide among Black communities (Lincoln et al., 2012).

Despite the paucity of literature focused on disparities in suicide risk and behaviors in subgroups of correctional populations, findings from the general population appear to largely persist in correctional populations (McCullumsmith, Clark, Perkins, Fife, & Cropsey, 2012). Studies show that younger male offenders are at much greater risk for suicide than older males (i.e., McCullumsmith et al., 2012). Results from a study conducted within a Maryland penitentiary indicate that almost half (46%) of the facility-wide suicides were attempted by inmates between the ages of 25 and 34 (Salive et al., 1989). When extrapolating suicide rates per 100,000 prisoners, the inmates between the ages of 25 and 34 years carried a much higher suicide rate (52.4) than any other group, with older age groups carrying a rate of approximately 20.5 (ages 35-54), and those above 55 carrying a suicide rate of zero per 100,000 (Salive et al., 1989). In significant contrast, an epidemiological study conducted by the U.S. Department of Justice suggests a positive linear trend, with those between the ages of 18 and 25 completing suicide at a rate of 38 per 100,000, and those above 55 years of age having 58 completed suicides per

100,000 (U.S. Department of Justice©). No postulations regarding this large discrepancy are offered; however, it is possible that Salive and colleague's (1989) findings are less relevant given that the study is over 20 years old, and may be skewed given the disproportionate representation of inmates above 34 years of age.

Similar to their non-offender counterparts, male offenders also carry a higher prevalence rate for serious near-lethal attempts and are 4 to 5 times more likely to complete suicide than their female counterparts (Daniel & Fleming, 2005; Perr, 1985). They are less likely, however, than their female counterparts to engage in suicide-related behaviors, such as cutting (Daigle, Alarie, & Lefebvre, 1999).

Studies consistently show that offender suicide completers are most likely to be White and male, while no empirically supported theory has offered causal mechanisms underlying these gender and racial disparities among offenders (Baillargeon et al., 2009; Mann, 2002; Tripodi & Bender, 2006; Way et al., 2005). Additional ethnicity-related differences have emerged, with findings suggesting that a pre-incarceration status of living alone and a single marital status are unique risk factors for suicide ideation in Black offenders compared to cohabiting with a partner or family member (McCullumsmith et al., 2012). In White offenders, having a minimum education level of a high school diploma was a protective factor, but this was not a significant factor for Blacks (McCullumsmith et al., 2012). Discrepancies regarding the role of substance use also exist. Similar to studies on the general population (e.g., Kung, Pearson, & Wei, 2005), alcohol dependence was predictive of suicide attempts in White but not Black offenders, while substance dependence more broadly was a risk factor for both White and Black offenders (McCullumsmith et al., 2012). However, research by Hunt et al. (2003)

showed that drug use is a risk factor among Black offenders only. A sizeable portion of research has examined status risk factors of suicide in offenders, such as gender and ethnicity, but it has focused little on dynamic risk factors, such as psychological symptoms, which can wax and wane over time. Given the robustness of findings evidencing ethnic disparities in suicide among offenders, more research in the area of non-demographic factors is warranted to explore suicide outcomes more comprehensively.

Beyond ethnic differences in the prevalence of suicide, those inmates who are currently using illegal substances and those who report a history of engagement in non-suicidal self-injurious behaviors are considered to be at a higher risk for attempting suicide in prison (Carli et al., 2010). Prisoners with a chronic medical condition, such as AIDS, demonstrate an elevated risk of suicide, as suicide is sometimes thought to be a way to cope (Peng et al., 2010).

The literature has clearly established a strong relationship between mental illness and suicide variables (e.g., attempts and ideation) in inmates (e.g., Saarinen, Lehtonen, & Lonnqvist, 1999; Way et al., 2005). Suicidal prisoners are more likely to have been diagnosed with clinical depression, with approximately 70% of suicidal prisoners being diagnosed with major depression (Saarinen et al., 1999). Bipolar offenders are also more likely to be suicidal, as are prisoners with a psychotic disorder (Roose, Glassman, Walsh, Woodring, & Vital-Herne, 1983). Depressed inmates who actively experience persecutory delusions, a symptom of psychosis, are 5 times more likely to complete suicide than their non-psychotic counterparts (Roose et al., 1983).

Way et al. (2005) examined the psychiatric diagnoses of inmates who were receiving psychological care when completing suicide. Compared to their non-suicidal counterparts who were receiving mental health treatment, inmates who completed suicide were diagnosed with a depressive disorder less frequently and were more likely to be diagnosed with schizophrenia, an adjustment disorder, or a personality disorder. A potential hypothesis for the lack of connection between suicide and depression in offenders is the moderating impact of violent behaviors. The authors posit that in many cases, depressive symptoms were absent in violent offenders, but highly prevalent in non-violent offenders. Thus, the impact of depression on suicide risk seems to be contingent on a history of violent behaviors. The authors hypothesize that the higher prevalence of adjustment disorders among inmates who completed suicide is related to the stressors (e.g., inmate conflicts) found in prison environments (Way et al., 2005).

Other researchers have pointed to the prevalence of personality disorders among inmates who engage in suicide behaviors, with those carrying a personality disorder diagnosis 12 times more likely to complete suicide. Other studies cite that of those inmate suicide completers, 40- 60% were diagnosed with a personality disorder (He, Holzer, Nathan, & Veasey, 2001; Way et al., 2005). A personality disorder diagnosis is also significantly related to an increase in lethality (i.e., the likelihood that a suicide attempt will result in death) of suicide attempts, placing this group at even greater vulnerability for completing suicide (Magaletta et al., 2008). The most common personality disorder in forensic settings is Antisocial Personality Disorder, which involves violence, impulsivity, and manipulateness, and is the most common

personality disorder to be diagnosed among suicide completers in prison according to the findings of Way et al. (2005).

Previous psychiatric care is a consistent and strong predictor of completed suicide in prison, with research evidencing that inmates with a psychiatric history are 8 times more likely to engage in suicide behaviors (Tripodi & Bender, 2006). Of those completing suicide, 85% had some mental health treatment prior to their death, and 40% had a history of psychiatric hospitalization (Cox, 2003). In Magaletta et al.'s (2008) study of incarcerated suicide attempters, over half of the sample reported having no prior suicide attempt while approximately 38% of the sample reported having 1-2 previously documented in-prison attempts.

Posthumous studies have been conducted evidencing the limitations of psychiatric care provided to individuals before completing suicide. Earle's (1994) study of community outpatients who completed suicide revealed that an overwhelming majority of patients (73%) denied suicidal ideation and expressed no intention to complete suicide. Of the sample, 30% were resistant to accepting treatment. Similarly, in examining those inmates in jails, Hayes (2010) provided data evidencing a lack of communication of suicidality in suicide completers. According to the findings, only 8% were placed on suicide watch precautions, while approximately 48% received mental health treatment within three days of their completed suicide. Also, the study found a statistically significant discrepancy between reported history of suicide behaviors and actual suicide history, evidencing inmate under-reporting. Further, 13% signed no harm contracts before completing suicide, suggesting the limitation of this intervention.

Way et al. (2005) agrees with this pattern of underreporting, citing that suicide ideation is often not communicated by inmates and that mental health professionals treating inmates should be warned against dismissing suicide risk factors when inmates with mental health problems report no suicidal ideation. Researchers posit that prisoners are motivated to underreport suicidal ideation and behaviors due to various reasons. According to Carothers (2003), prisoners often do not seek help because a common consequence of admitting suicidal thoughts is segregation, which is perceived as a form of punishment. Also, because mentally ill inmates are at higher risk of recidivating, a diagnosis of a mental illness or an increase in mental health treatment (e.g., receiving suicide watch precautions) can potentially result in longer sentences. A mental health treatment record can potentially damage a prisoner's case when seeking consideration for parole (Way et al., 2005). Correia (2000) adds that instruments designed to assess for suicidality tend to have high face validity, and thus are easily manipulated by offenders who are either feigning or underreporting suicidal ideation and/or behaviors. Studies on psychiatric inpatients can shed light on the issue, as they are placed under high levels of restrictions and are frequently involved in the legal system similar to inmates (Torrey et al., 2010). Some psychiatric inpatients report an improvement in suicidal ideation in order to achieve an environment amenable to attempting suicide (e.g., lower level of surveillance or supervision; Morgan & Priest, 1984).

Mental health professionals treating offenders are provided recommendations for conducting thorough assessments of suicide, as assessment of suicide in correctional settings is highly valued as a critical, and necessary, aspect of treatment (e.g., Hayes, 2010; Pompili et al., 2009). These assessments are aimed at identifying risk for suicide

early and to prevent suicide attempts from occurring. One recommendation is the utilization of multiple sources of data to determine suicide risk category, including interview-based assessments at intake and throughout an inmate's stay at a correctional center (Pompili et al., 2009).

Many prison assessment procedures utilize actuarial data to evaluate suicidality in prisoners. This type of data, such as the presence of known risk factors, is limited according to Adams and Ferrandino (2008). The researchers posit that actuarial predictions of suicide risk tend to focus on extremes of the continuum of suicide risk, placing an overly narrow focus on high-risk inmates and leaving those inmates experiencing prodromal, or low levels of suicidality, less thoroughly examined (Adams & Ferrandino, 2008; Bryan, 2011). Additionally, these types of risk assessments are not theoretically informed, and may be unable to capture subtly nuanced changes in suicide risk when used in ongoing assessment throughout an inmate's stay (Adams & Ferrandino, 2008). Utilizing actuarial risk assessment procedures alone may limit an assessment because no theoretical framework is offered. Thus, a combination of both actuarial and theoretical data is likely the strongest form of assessments.

A relatively new theoretical framework regarding the etiology of suicide has been presented in the literature to aid in understanding suicide risk. Joiner (2005) proposed the Interpersonal-Psychological Theory (IP Theory) of suicide as a way of understanding suicide risk more thoroughly. Joiner (2005) outlined that the field of psychology's current theoretical perspectives understand suicide in an incomplete and narrow manner. For example, the cognitive-behavioral theory purports that hopelessness is a key risk factor that increases risk of engaging in suicide behaviors (Beck, Brown, Berchick,

Stewart, & Steer, 1990). Other cognitive theorists place an importance on emotional dysregulation (Linehan, 1993), while psychodynamic theories emphasize the unconscious drive for ending one's life (Menninger, 1938). In total, Joiner (2005) stated that these theories' main shortcomings include the inability to examine more than only a few risk factors for suicide and are not comprehensive in nature.

IP theory's basic premise is that "people die by suicide because they can and because they want to" (Van Orden et al., 2010, p. 581). The framework offered by the theory incorporates two factors that are related to a desire to die (i.e., perceived burdensomeness and thwarted belongingness), and one factor that determines capacity to engage in suicide behavior (i.e., acquired capability). Overall, the theory purports that the presence of desire for suicide, coupled with an increased capacity for suicide increases risk for engaging in suicidal self-directed violence.

Perceived burdensomeness, one of the aforementioned factors related to suicidal desire, is described as a feeling of inability to contribute to society and the sense of being a liability and burden on others (Van Orden et al., 2010). This type of thinking can cause one to believe death would be a better option than continued life. Unemployment, family conflict, and serious physical illness have been identified as stressors that may increase the risk for someone to engage in this type of thinking. The construct of perceived burdensomeness involves two dimensions: sense of causing another person liability, and "affectively laden cognitions of self-hatred" (Van Orden et al., 2010, p. 583). The theory denotes that distress related to incarceration is a likely indicator of this sense of liability in that an individual who has been incarcerated may believe that their death is worth more to others than their life (Joiner, 2005; Van Orden et al., 2010).

Thwarted belongingness, which is the other factor related to suicidal desire, produces a feeling that one is disconnected and distant from others or misunderstood in his/her experiences of suffering (Joiner, 2005). The construct is considered a dynamic and fluctuating affective and cognitive state that incorporates two dimensions: a general sense of loneliness and an absence of meaningful and reciprocal relationships. The most obvious evidence of severe thwarted belongingness is social isolation and withdrawal. It is postulated that the more time that has passed in this state, the higher the risk for suicide behaviors. Factors positively associated with thwarted belongingness include living alone, few friends, a disconnected family network, domestic violence, childhood abuse, loss of close others, and family conflict (Joiner, 2005; Van Orden et al., 2010). Specifically relevant to the current study, many prisoners initially experience a sense of aloneness, isolation, and general distress related to relocating to a prison environment and away from sources of social support (Galanek, 2013; Tripodi & Bender, 2006). Further, segregation and solitary confinement conditions utilized in some prisons often exacerbate symptoms of mental illness as they impose a sense of isolation at its most extreme (Adams & Ferrandino, 2008).

Overall, the two above-mentioned factors together are causally related to desire and intent for suicide according to theory (Van Orden et al., 2010). Empirical results also support the theorists' posited connection, evidencing that both interpersonal needs were significantly predictive of suicidal ideation ( $f^2 = .43$ ; Van Orden, Witte, Gordon, Bender, & Joiner, 2008). Joiner (2005) stated that the presence of protective variables related to one factor does not preclude the presence of elevated risk in the other factor (i.e., high

level of familial support lowers risk for thwarted belongingness, but does not necessarily lower risk for perceived burdensomeness).

Interpersonal-Psychological theorists posit that those who experience suicidal ideation but never attempt suicide have not acquired the capability to inflict their own death (Joiner, 2005). While most individuals have an innate drive to avoid danger and the threat of death, those who complete suicide have a greater capacity to overcome the natural avoidance of danger required to complete the act of suicide. The acquired capability component of the theory of suicide determines who is capable of engaging in the act of suicide, which is independent from the interpersonal needs that may provide the impetus for suicide ideation. Specifically, the theory purports that individuals with a high tolerance for physiological pain and a reduced fear of death are more able to complete suicide.

According to Solomon's (1980) Opponent-Process theory, repetitive exposure to painful stimuli decreases the effect of those stimuli (e.g., pain), while increasing the opposite effect (e.g., pleasure, euphoria). The theory refers to the "affective phenomena" that occur when an unconditioned stimulus is repeatedly presented to an individual: (a) Affective contrast, (b) Affective habituation with repeated exposure, (c) Withdrawal once stimulus is terminated, and (d) Opposite affective response (Solomon, 1980). For example, exposure to and involvement in violence may facilitate one's acquired capability as it increases fear and pain tolerance.

Also, the opponent-process principle applies to non-suicidal self-directed violence, in that engaging in self-injurious behaviors causes both physiological pain and emotionally analgesic effects (Joiner, 2005). This habituation to painful stimuli and

extremely fearful or threatening events via repeated exposure is considered the underlying mechanism of acquired capability. Joiner (2005) stated that the most salient and direct methods of raising acquired capability involve both suicide behaviors (i.e., practicing noose-tying) and self-harm behaviors (e.g., non-lethal cutting).

Precipitating variables that can increase risk for acquired capability include impulsivity, exposure to suicide behaviors of others, combat exposure, suicide attempts, and experiencing childhood abuse or familial violence (Bryan & Anestis, 2011; Joiner, 2005; Van Orden et al., 2010). Veterans who attempt suicide are most likely to use a firearm to carry out suicide, which highlights the theory's postulation that a veteran's exposure and habituation to the fear related specifically to firearms has diminished (Kaplan, Huguet, McFarland, & Newsom, 2007). Similarly, research has shown that the number of combat experiences increased acquired capability in a sample of currently deployed military personnel (Bryan & Anestis, 2011). While no researchers have examined if exposure to violence and utilization of violent weapons (i.e., handguns) among inmates impacts acquired capability for suicide, studies of veteran exposure to combat suggest such a link. Similar to violent actions, Selby, Anestis, and Joiner (2007) demonstrated that violent daydreaming, involving vivid and graphic fantasizing about death by suicide, predicted the ability to engage in suicide in addition to a variety of suicide behaviors (i.e., ideation, lifetime number of attempts, and suicide planning) among college undergraduates. Thus, the mental rehearsal component implied in fantasizing about suicide plays an important role in determining capability, and thus risk, for suicide (Selby et al., 2007).

Finally, the Interpersonal-Psychological theory incorporates what current suicide literature has expounded; depression carries a significant role in the etiology and risk for suicide. Depressive symptoms have been the focus of cognitive theories of suicide, with the key predictor being feelings of hopelessness (Beck, 1976). While Joiner (2005) incorporates depression in the theory, his proposed, and separately delineated, factors of the theory (i.e., thwarted belongingness, perceived burdensomeness, and acquired capability) are distinctly different and tap unique constructs apart from depression. However, depression is conceptualized as an important risk factor. Because depressive symptoms and perceived hopelessness are statistically correlated with suicide behaviors, these variables are often used as covariates in studies that focus on the IP theory of suicide (Anestis et al., 2011; Van Orden et al., 2010). Overall, this theory has added to the conceptualization of suicide etiology and provides a framework for investigating the dimensional aspects of suicide behaviors in a more complete and comprehensive manner. It has also provided diagnostic tools (such as the INQ) to utilize in assessing suicide risk factors (i.e., Bryan, 2011).

Although the theory is a relatively new multi-factorial framework for studying the etiology of suicide, it has been met with considerable empirical support (e.g., Anestis & Joiner, 2011; Van Orden et al., 2010). A number of studies have provided support for the theory by reporting significant three-way interactions between the theory constructs in predicting suicide behaviors and risk of suicide (e.g., Anestis & Joiner, 2011; Joiner et al., 2009; Van Orden et al., 2008). The theory has been utilized in a variety of samples, including military samples, community outpatients with mood disorders and emotion dysregulation, substance use disorder patients, and undergraduates (Anestis & Joiner,

2011; Anestis et al., 2011; Joiner, Hollar, & Van Orden, 2006; Joiner et al., 2002; Van Orden, Lynam, Hollar, & Joiner, 2006; Van Orden et al., 2008) Although the theory has been validated in these studies, little research has examined the use of this model of suicide in an offender population, even though offenders are widely reputed for being a high-risk group.

Researchers Simlot, McFarland, and Lester (2013) conducted a preliminary study testing the IP theory in a small sample ( $n = 48$ ) of inmates from county jails. Their findings evidence the robust relationship between thwarted belongingness and past suicidal behavior postulated by the IP theory. Thwarted belongingness also significantly predicted the inmate's perceived likelihood of future suicide behavior. Interestingly, perceived burdensomeness did not carry such significant predictive weight; the construct did not predict suicide behavior as the researchers hypothesized. It is of note that the IP theory does not explicate that interpersonal needs (i.e., thwarted belongingness and perceived burdensomeness) are related to suicide behavior, as it has been hypothesized and empirically tested to be a robust predictor of suicidal ideation (Simlot et al., 2013). Mandracchia and Smith's (2013) preliminary findings indicate that interpersonal needs are significantly predictive of suicidal ideation in a large sample of male inmates ( $n = 399$ ).

In examining the presence of suicidal ideation, assessing both perceived burdensomeness and thwarted belongingness is important, as the IP theory states that these factors are necessary for suicidal ideation to be present. Both perceived burdensomeness and thwarted belongingness are measured using the Interpersonal Needs Questionnaire (INQ), a short self-report measure (Van Orden et al., 2008). However, due

to the limited nature of research on measuring the interpersonal needs component of the theory, the INQ is still being explored for its reliability and validity and has been revised since its recent development. The original INQ included 25 items; however, it has been shortened to 15 items in order to correct for multicollinearity and to improve its clinical utility (Van Orden et al., 2008; Van Orden, Cukrowicz, Witte, & Joiner, 2012).

Additional versions of the INQ have been proposed, such as the INQ-10 (e.g., Bryan, 2011) and INQ-12 (e.g., Freedenthal, Lamis, Osman, Kahlo, & Gutierrez et al., 2011).

Currently, the INQ has been supported by several studies demonstrating its reliability and validity (e.g. Freedenthal et al., 2011; Van Orden et al., 2008). The INQ-12 subscales have demonstrated internal consistency coefficients of .85 and .89 in male and female college students (Van Orden et al., 2008). The measure has shown internal consistency in college students (Freedenthal et al., 2011), older community-dwelling adults (Cukrowicz, Cheavens, Van Orden, Ragain, & Cook, 2011), and military personnel (Bryan, 2011). Also, preliminary findings from Mandracchia and Smith (2013) indicate that the INQ predicts suicidal ideation in a sample of male offenders, indicating that examining interpersonal needs in offenders is a fruitful avenue of research.

Evidence of construct and criterion-related validity was offered in studies of the INQ in various samples. Bryan (2011) studied the INQ-10, with results showing that the items predicted self-reported past suicidality and current negative affect. Freedenthal et al.'s (2011) college student study of the INQ-12 demonstrated that INQ scores correlated with other instruments assessing suicide risk (e.g., Modified Scale for Suicide Ideation [MSSI], Beck Depression Inventory-II [BDI-II]) in male and female college studies. Marty, Segal, Coolidge, and Klebe (2012) found that the perceived burdensomeness

scores in older adults positively correlated with measures of low self-worth and negatively correlated with measures of self-esteem. Similarly, the results demonstrated that thwarted belongingness scores were positively correlated with measures of loneliness and negatively correlated with positive relationship measures (Marty et al., 2012).

Content validity has been tested utilizing exploratory and confirmatory factor analyses. Van Orden et al.'s (2012) findings shed light on the issue of multiple instrument versions (i.e., original 25 items, 15 items, 10 items). The researchers examined the fit of the 25-item measure, finding that a reduced number of items (15) had the strongest evidence for model fit for the two latent factors of perceived burdensomeness and thwarted belongingness. The researchers conducted these factor analyses in various samples (i.e., college students, clinical outpatients, older adults), evidencing the strength of the 15 item instrument across the samples. Overall, the results indicated that the INQ-15 is the measure of choice, with 9 items loading exclusively onto thwarted belongingness and 6 items loading only onto perceived burdensomeness. Additionally, these 15 items are also more practical to administer than the original 25-item measure in clinical settings (Van Orden et al., 2012).

Other researchers have conducted factor analyses utilizing both community adults with a mean age of 73 years (Marty et al., 2012) and military personnel (Bryan, 2011). In these samples, the INQ demonstrated a strong two-factor structure of perceived burdensomeness and thwarted belongingness, consistent with the theory. In addition to the two-factors that the INQ measures, Freedenthal et al. (2011) found an additional overarching factor for overall distress. Both Freedenthal et al. (2011) and Marty et al. (2012) indicated that scale items loaded saliently onto thwarted belongingness, but not as

strongly on perceived burdensomeness, potentially indicating a weakness in the measurement of perceived burdensomeness (Freedenthal et al., 2011).

Bryan (2011) utilized a receiver operating characteristic (ROC) analysis to determine what scores on the INQ-10 would maximize the measure's ability to discern between individuals with current suicidal ideation and no current suicidal ideation. In doing so, Bryan (2011) argued that using cutoff scores for both perceived burdensomeness and thwarted belongingness would enhance the ability to detect the presence of suicidal ideation in military personnel, who often underreport suicidal thoughts. The findings suggest that a positive screen of perceived burdensomeness ( $PB > 1$ ) increased the probability of the presence of suicidal ideation from 5.9% to 18%. Similarly, a positive screen on the thwarted belongingness subscale ( $TB > 3.2$ ) resulted in an increase in the probability of the presence of suicidal ideation from 5.9% to 16.2%. Thus, determining cut-off scores for the INQ subscales has given some guidelines to clinicians assessing suicide in military personnel, as it is a simple and efficient method at ruling in or ruling out the presence of suicidal ideation (Bryan, 2011).

Although these helpful clinical guidelines have been determined for military populations, no such guidelines for the INQ exist for assessing inmates, even though some preliminary studies suggest that the IP theory is relevant to offenders. The only two exploratory studies of these constructs in correctional populations have been offered (i.e., Mandracchia & Smith, 2013; Simlot, McFarland, & Lester, 2013).

Mandracchia and Smith (2013) reported significant relationships between the interaction of INQ variables (i.e., perceived burdensomeness x thwarted belongingness) and suicidal ideation after controlling for depression and hopelessness in a large sample

of adult male prisoners. Simlot et al. (2013) found that thwarted belongingness, but neither interpersonal needs nor acquired capability, significantly predicted risk for future suicidal behavior in a small sample of county jail inmates. However, all three of these variables significantly predicted past suicidal ideation. The study, despite its limitation of sample size and methodological approaches (i.e., absence of examining the interaction of these variables as suggested by Joiner, 2005), suggests that the IP theory is relevant to this high-risk population (Simlot et al., 2013). Given these preliminary findings, further study is needed to determine the applicability of study measures, such as the INQ, and to determine clinically useful guidelines for administration in incarcerated populations.

#### Purpose of the Study

Currently, there is only preliminary evidence of a link between the interpersonal needs of the IP theory and suicidal ideation in offenders (i.e., Mandracchia & Smith, 2013; Simlot et al., 2013). Even though suicide is a major problem in this population, the potential benefits of utilizing a measure of these interpersonal needs for detecting offenders at high risk for suicide has not yet been realized. Thus, the current study is aimed at extending the IP theory in three ways. First, to investigate the validity of the two-factor model of the Interpersonal Needs Questionnaire in an incarcerated offender sample.

Secondarily, the current study is aimed at examining whether ethnic differences exist in INQ scores. Given that literature on the topic of suicide has consistently demonstrated significant discrepancies in suicide rates in the most commonly found ethnic categories in the U.S. (e.g., Whites, Blacks, Hispanics, and Others; e.g., McIntosh, 2010), it is possible that a measure tapping suicidal ideation may exhibit similar

discrepancies. Because the measure has been found to aid in the detection of suicide, it is important to explore potential differences that participants from various racial groups may exhibit.

Thirdly, the current study is aimed at examining construct validity by testing the clinical applicability of the INQ. Similar to the previously discussed analytic strategy of Bryan (2011), the study proposes to determine what INQ scores are most appropriate at ruling in or ruling out suicidal ideation. As researchers consistently highlight the shortcoming in relying on face-valid self-report instruments of suicide in offenders and other populations (e.g., Carothers, 2003; Correia, 2000; Way et al., 2005), determining a more subtle approach to measuring suicide ideation has the potential to improve the ability of clinicians to detect and treat at-risk offenders.

#### Research Questions

1. Is a two-factor model of the INQ supported in an offender sample?
2. Does group variability exist across ethnicity in interpersonal needs in an offender sample?
3. What is the optimal INQ cutoff score for the detection of current suicidal ideation in an offender sample?

## CHAPTER II

### METHOD

#### Participants

The current study utilized archival data from a large-scale study of 399 adult male offenders who were incarcerated within two Mississippi Department of Corrections facilities. The participants' mean age was 34.94 years ( $SD = 10.86$ , Range 19-69). The overwhelming majority of participants identified as Black ( $n = 220$ , 55.1%) or White ( $n = 144$ , 36.1%). Thirty-five (8.8%) reported identifying as a race other than Black or White. Regarding level of formal education attained, most ( $n = 206$ , 51.6%) reported obtaining a high school diploma or General Equivalency Diploma (GED), 17% ( $n = 68$ ) reported attending some college but not receiving a degree, 14.8% ( $n = 59$ ) reported completing grade school (i.e., through 8th grade), 7% ( $n = 28$ ) reported receiving a college degree, 2% ( $n = 8$ ) reported not completing grade school (i.e., stopped attending school before completing the 8th grade), and 1% ( $n = 4$ ) reported obtaining an advanced degree (i.e., beyond a bachelor's degree). Almost half of the participants reported they were single and had never been married ( $n = 177$ , 44.4%), 22.1% ( $n = 88$ ) reported being married, 16% ( $n = 64$ ) reported being divorced, 6% ( $n = 24$ ) reported being partnered or in a common-law marriage, 5.3% ( $n = 21$ ) reported being separated from their spouse, and 1.5% ( $n = 6$ ) reported being widowed.

Regarding the participants' index offenses (i.e., primary crime for which each participant was currently incarcerated), 30.6% ( $n = 122$ ) listed a drug offense (e.g., possession, manufacturing, distribution), 27.6% ( $n = 110$ ) listed a property offense (e.g., burglary, forgery, theft), 22.3% ( $n = 89$ ) listed a violent offense (e.g., murder, robbery,

assault), 9% ( $n = 36$ ) listed a sex offense (e.g., rape, sexual battery, exploitation of a minor), and 3% ( $n = 12$ ) listed some other offense (e.g., violation of probation, accessory after the fact). Eight percent ( $n = 32$ ) of participants reported they were serving a life sentence, whereas the mean sentence length for those without a life sentence was 9.11 years ( $SD = 9.33$ , Range = 3 months – 60 years). Participants reported having already served a mean of 3.97 years ( $SD = 5.287$ , Range = 0.2 months – 31 years) on their current sentence. Most offenders (78.4%) reported not currently being diagnosed with a mental health disorder, while 12% reported a current diagnosis. While 7.3% reportedly were receiving mental health services, such as psychotherapy, at the time of data collection, 5.8% of the sample reported currently receiving psychiatric medications. Forty-three participants (10.8%) reported attempting to hurt oneself with the intent to die, and of those individuals, 89.7% reported making five or less attempts in their lifetime. Of the 43 participants who reported engaging in a suicide attempt, 72.7% stated that they had not engaged in such behavior in the past year. With regard to non-suicidal self-injury, 6.8% (27 participants) reported engaging in such behavior. The majority of those participants reported no non-suicidal self-injury behaviors in the past year (63.2% of those who endorsed non-suicidal self-injury). See Table 1 for a summary of demographic information of the sample.

Table 1

*Demographic Characteristics of the Sample.*

Characteristic	<i>N</i>	%
Age ( $m = 34.94$ , $SD = 10.86$ )	399	100
Ethnicity		
White	220	55.1
Black	144	36.1

Table 1 (continued).

Characteristic	<i>N</i>	%
Other	35	8.8%
Education		
Incomplete grade school	8	2
Grade school	59	14.8
High school/G.E.D.	206	51.6
Some college	68	17
College degree	28	7
Advanced degree	4	1
Primary Offense		
Drug	122	30.6
Property	110	27.6
Violent	89	22.3
Sex	32	9
Other	12	3
Currently diagnosed with psychological disorder	48	12
Currently receiving mental health treatment	29	7.3
Lifetime suicide attempt	43	10.8
Lifetime non-suicidal self-injury	27	6.8

### Materials

The self-report demographic form contained questions regarding basic demographic status (e.g., age, race/ethnicity, education), as well as items related to participants' correctional status (e.g., index offense, sentence length, time served), and items related to suicide behaviors and non-suicidal self-injury. The form inquired into current mental illness diagnoses, mental illness treatment, and psychotropic medication usage, in addition to history of suicide behaviors and/or non-suicidal self-injury. It also asked participants to specify the method of suicidal or non-suicidal self-injury behaviors reported (see Appendix).

The 15-item Interpersonal Needs Questionnaire (INQ; Van Orden et al., 2008) is a self-report measure that examines the presence of both thwarted belongingness and

perceived burdensomeness. Items are measured on a Likert scale from 1 (“Not at all true for me”) to 7 (“Very true for me”), with a separate score provided for both thwarted belongingness and perceived burdensomeness. The overall measure demonstrated an alpha coefficient of .846 in the current sample. Specifically, the alpha coefficient for the PB subscale (.87) lies in the “acceptable” range and the TB subscale (.76) lies in the “questionable” range ( $\alpha = .76$ ), as suggested by George and Mallery (2003) and Kline (1999). Previous studies have provided evidence for construct validity when correlated with other theoretically relevant measures (e.g., loneliness; Van Orden et al., 2008; see Appendix).

The Beck Scale for Suicide Ideation (BSSI; Beck and Steer, 1991) was utilized to assess for level of suicide ideation. The first 19 items of the 21-item self-report measure examine level of suicide ideation, whereas the last two items inquire about lifetime number of suicide attempts and desire for death during attempts. Overall score of the 21 items range from 0 to 38, with higher scores indicating higher levels of overall suicide risk. Beck and Steer (1991) advise clinicians to further evaluate patients who elevate any item on the measure (i.e., total score  $> 0$ ), as it indicates the potential presence of suicidal ideation or intent. The current study evidences strong internal consistency for the measure ( $\alpha = .94$ ). Previous research has also demonstrated strong internal consistency ( $\alpha = .98$ ), concurrent validity ( $r = .90$ ), and predictive validity in determining high suicide risk (Beck, Brown, & Steer, 1997; see Appendix A).

### Procedures

Potential participants were identified for study participation by the correctional staff (e.g., officer, warden, assistant warden) at each institution. A convenience sampling

approach was employed such that inmates were recruited by housing area. Specifically, all inmates present in particular housing areas from the general inmate population at the time of the research study were instructed to go to the data collection site. This sampling approach was necessary to maintain the efficient functioning of the institution.

The data collection occurred in a group format, and thus the data collection sites generally consisted of classrooms, visitation areas, and dining areas. Once all recruited potential participants arrived at the data collection site, the researchers explained the nature and purpose of the study and encouraged the inmates to review the consent form. Those inmates who declined to participate were allowed to leave in accordance with institutional policy (e.g., allowed to leave during open movement times or when provided permission by a correctional staff member). Those who chose to participate completed the research materials and then exited the data collection in accordance with institutional policy.

### Hypotheses

1. What is the factor structure of the INQ-15 for a male prison sample?

*It is hypothesized that the two-factor structure derived from previous studies of the INQ-15 (e.g., Marty et al., 2012) will be confirmed for this sample.*

2. Does group variability exist in interpersonal needs across ethnicity in a male prison sample?

*It is hypothesized that group variability will exist on the INQ, evidencing different factor structures across both White and Black ethnic groups.*

3. What is the optimal INQ cutoff score for the detection of current suicidal ideation, as measured by the BSSI?

*Utilizing a Receiver Operator Characteristic curve (ROC curve), it is hypothesized that the INQ total cutoff score will identify suicidal ideation better than chance, with the BSSI used as the criterion variable.*

## CHAPTER III

### RESULTS

#### Data Screening and Participation

After all data were entered into Statistical Package for the Social Sciences data file (IBM Corp. Released 2010, IBM SPSS Statistics for Windows, Version 19.0. Armonk, NY: IBM Corp.), 10% of the data packets were randomly selected to compare to the data file, and an error rate of .109% was found. Those errors found in 10% of the data were identified in the data file and corrected.

Items for the INQ and BSSI were scored as instructed, with INQ subscales being added for two subscale sum scores and one total sum score. For the BSSI, items were also summed for a total score. BSSI scores were dichotomized (0 “negative,” 1 “positive”) in order to make the variable amenable to analysis. Any elevation on the measure (total score > 0) was determined “at risk,” similar to Bryan’s (2011) procedure. This scoring approach is also recommended by Beck and Steer (1991), who reported that any elevation on the BSSI deserves further examination for the presence of suicide risk. Participants’ scores were prorated on the INQ if a participant’s responses included missing items in less than 20% of the measure of interest. If larger portions of missing data were present, no score was calculated to avoid misrepresentation of data from unfounded extrapolation. For the confirmatory factor analysis and invariance testing, missing values were addressed using Maximum Likelihood Estimation, which is further described below. See Table 2 for the means, standard deviations, and correlational matrix for the study variables.

Table 2

*Means, Standard Deviations, and Correlation Coefficients for Study Measures*

	1	2	3	4
1. INQ Total	1	.790**	.897**	.481**
2. INQ PB		1	.422**	.559**
3. INQ TB			1	.308**
4. BSSI				1
Mean	40.82	12.65	28.40	2.22
SD	17.73	8.75	11.79	5.30

Note: INQ: Interpersonal Needs Questionnaire, PB: Perceived Burdensomeness, TB: Thwarted Belongingness, BSSI: Beck Scale of Suicidal Ideation, BSSI: Beck Scale for Suicide Ideation

\*\*p<.01.

### Statistical Analyses

Research Question One asks, “What is the factor structure of the INQ for an adult male prison sample?” It was hypothesized that the two-factor structure derived from previous studies (e.g., Bryan, 2011; Marty et al., 2012) on the measure would be confirmed for this sample. Those findings indicate that six items of the measure load onto Perceived Burdensomeness (PB Subscale) and nine items loaded onto Thwarted Belongingness (TB Subscale). To evaluate the fit of that factor structure of the INQ, a confirmatory factor analysis (CFA) was conducted using the statistical program AMOS (SPSS, Chicago: IL). In AMOS, the structure of this previously determined model was replicated, and the analysis was conducted using Maximum Likelihood Estimation for missing items. This estimation technique was selected because it is more robust in handling missing data than other methods such as Multiple Imputation (Enders,

2001). This procedure works by minimizing discrepancies between item correlations found in the sample and the hypothesized model structure (Tabachnick & Fidell, 2001).

Factor analyses yield fit indices that examine and estimate the degree to which the data fit the factor structure identified. The chi square estimate (i.e.,  $\chi^2$ ) is considered an “absolute” fit estimate, as it compares an actual model to observed data (Meyers, Gamst, & Guarino, 2006). The  $\chi^2$  compares the fit of the hypothesized model to the fit of the saturated model (i.e., an unconstrained model), which allows for the items to fit the data perfectly. This unconstrained model corresponds to a  $\chi^2$  of 0. The current 15-item model produced a  $\chi^2$  of 466.993 ( $df = 91$ ;  $p = .000$ ), indicating that the specified model is significantly different from the unconstrained model and thus poorly fitting. It is important to note that using  $\chi^2$  alone as an indication of model fit can be problematic and misleading for large sample sizes due to excess power. Thus, even small residuals could be deemed significant in large samples (Browne & Cudeck, 1993). In the current sample of 363, the  $\chi^2$  may be biased against the hypothesized model, although it is still useful as an indicator of improved fit when models are respecified, or altered, in order to improve fit. In addition to utilizing  $\chi^2$  to determine fit, the CMIN value is often also evaluated, wherein fit is determined by dividing CMIN by the degrees of freedom (i.e.,  $CMIN/df$ ). This value, if above 5, indicates unacceptable fit, with scores ranging between 3 and 5 indicating permissible fit, and those values below 3 indicating good fit (Bollen & Curran, 2006). The  $CMIN/df$  value for the current model is 5.13, indicating unacceptable fit. See Table 3 for a summary of fit indices.

Table 3

*Confirmatory Factor Analyses Measures of Fit*

Fit Index	Original Model (15 items)	Improved Model (12 items)
$\chi^2$	466.993 ( <i>df</i> = 91)*	204.016 ( <i>df</i> = 55)*
CFI	.819	.901
RMSEA	.107 (90% C.I.: .097-.117)	.083(90% C.I.: .071-.095)
AIC	554.993	274.016

Note, \*  $p = .000$

Another commonly used index to evaluate fit of a model is the Comparative Fit Index (CFI). The CFI is considered a relative (or baseline) fit estimate, because it compares the fit of a hypothesized model to the fit of the independent model, in which items (or latent variables) are not correlated. Also, this fit estimate adjusts for sample size. The CFI ranges from 1 to 0, and represents the portion of the variation in the data that may be a result of a model (Byrne, 2010). Goodness of fit is usually determined at a .90 level, with anything at or above this statistic indicating good fit (Byrne, 2010). With this cutoff, the hypothesized model does not appear to fit the data, with a CFI value of .819.

The root mean square error of approximation (RMSEA) is an absolute goodness-of-fit measure. It represents the degree to which a lack of fit is present based on degrees of freedom, determined by sample size. Because it addresses the size of the sample similarly to the CFI, it is considered a less biased indicator of model fit (Meyers et al., 2006). According to Browne and Cudeck (1993), the RMSEA assesses approximate fit and is more reasonable in evaluating models as compared to the dichotomous decision

that is offered by the CFI. Browne and Cudeck (1993) have offered the following guidelines in interpreting RMSEA values: .05 and less indicates good fit, .051 to .08 indicate reasonable fit, and .081 to .10 indicate questionable fit, and values above .10 infer unacceptable fit of the model. The RMSEA offered by the hypothesized model is .107 with a 90% confidence interval of .097 to .117. Using the guidelines explicated above, the current model fit is unacceptable.

Confirmatory factor analyses also include an examination of the standardized regression weights produced by the model to determine the amount of the factor's variance that each item is accounting for. These coefficients are also called factor loadings and are examined when determining which items are poorly related to factors during respecification of a poorly fitting model. Very low coefficients with no statistical significance indicate that a certain item is not related to its factor, and these are examined for deletion (Byrne, 2010).

Three items (#9, #11, and #12) from the Thwarted Belongingness factor were poorly related, with coefficients equaling .142, .210, and .187, respectively. These factor loading values indicate that the items correlate very poorly with the factor on which they are specified. Item 9 states "These days, I rarely interact with people who care about me." This item, upon inspection, is less theoretically applicable to this correctional sample, as it addresses presumably normative and positive social interactions with others that are perceived as caring. Due to the lack of involvement with individuals outside of prison confines, this item is likely not appropriate. Item 11 states, "These days, I feel disconnected from other people," and item 12 states, "These days, I often feel like an outsider in social gatherings." Similar to item 9, these questions may be tapping

constructs that are less relevant to a prison setting. For example, feeling disconnected and feeling like an outsider are likely common when referencing non-prison social circles, but may be less relevant when referencing within-prison membership affiliation. These items, simply put, fail at tapping the unique social aspects of correctional settings. In order to attempt improving the model both empirically and theoretically, these three items were removed.

The CFA was again performed on the new 12-item model and new fit indices and regression weights were examined. The  $\chi^2$  fit index improved (204.016;  $df = 55$ ,  $p = .000$ ), indicating that this model is better fitting of the data than the previous model. While the fit did improve, this finding still indicates that the model was rejected. Given the tendency for  $\chi^2$  to be over-powered with sample sizes as large as the one utilized in the current study, other indicators of fit will be examined closely to determine fit (Browne & Cudeck, 1993). The CMIN/ $df$  value for the 12-item model is 3.71, which is in the acceptable range. The RMSEA value indicates moderate fit (.083, 90% C.I.: .071 - .095) and the CFI indicates good fit (.901; see Table 3). Thus, all fit indices, with the exception of the  $\chi^2$ , indicate improvement and acceptability of the 12-item model.

Also relevant to the respecification process is the Akaike Information Criterion statistic, which can be utilized to compare the fit of two models. The statistic measures the degree to which the implied and observed covariance matrices differ. It is unique in that it is used only to compare two models and should not be used to evaluate whether or not a single model is good fitting. When this value lowers from one model to another, it can be determined that the second model is better fitting (i.e., the model corresponding with the lower AIC value). The original 15-item model produced an AIC of 554.993,

where the 12-item model produced an AIC of 274.016. Given that this value was almost halved, the 12-item model appears to be better fitting.

In the final model, three items were found to not have any strong factor loadings on either of the two factors. Therefore, this model retained 12 of the original 15 INQ items. The  $\chi^2$  decreased from the original model, indicating improvement in fit. Consistent with Browne and Cudeck's (1993) findings, the  $\chi^2$  can be an overly sensitive goodness-of-fit measure and is easily affected by larger sample sizes. As such, the hypothesis that the model was a good fit with the data was rejected, as indicated by the significant  $p$  value ( $df = 55, p = .000$ ). The CFI value improved between the original and improved model, indicating that the final model is well-fitting. Also, the RMSEA index value improved, suggesting that while the fit is not categorized as excellent, it does indicate moderate and acceptable fit compared to the original model's poor fit. Finally, the AIC value improved from the original model, adding more evidence for the strength of the revised model of interpersonal needs. In sum, given the overall reasonable indicators of goodness-of-fit for the final model, Hypothesis One was not supported in that the factor structure was confirmed in this sample, but with three items removed.

All subsequent analyses were conducted with the improved 12-item model. Thus, new internal consistencies were assessed, with alpha coefficients indicating improvement from .74 for the INQ-15 PB to .871 for the INQ-12 subscale, and from .61 for the INQ-15 TB to .79 for the INQ-12 TB subscale. This indicates that the items correlate more strongly with one another than they previously did before the model was examined for this sample specifically. For each scale, the score was calculated by summing the responses for each item on the scale. Therefore, the PB scale, represented by six items,

ranges in scores from 7 to 42, and the TB scale, represented by the remaining 6 items, ranges in scores from 7 to 42.

Research Question Two asked, “Does group variability in interpersonal needs exist across ethnicity in a prison sample?” It was hypothesized that group variability will be present, evidencing different factor structures across both White and Black ethnic groups, given that suicide patterns vary broadly between racial and ethnic samples (e.g., Gutierrez et al., 2001). To test this hypothesis, a multi-group modeling procedure was used with AMOS software (Amos Version 7.0: Chicago: SPSS). Equivalence, or invariance, was tested by first examining the configuration of the factor structure and pattern of factor loading of the INQ between both groups of Whites and Blacks. Secondly, metric invariance was tested, which asks the question of whether the factor loadings vary across groups.

Configural invariance is the “first step” in conducting invariance tests. In assessing configural invariance, the configuration of the factor structure is examined between groups. Configural invariance refers to the *pattern* of free and fixed model parameters across groups. To do this, a baseline model must first be estimated for each group separately. The configural invariance test provides goodness-of-fit indices while taking into account the parameters across both groups. The current data evidence a  $\chi^2$  of 224.538 with 106 degrees of freedom ( $p = .001$ ). The CFI and RMSEA values are .933 and .056 (95% C.I.: .040 - .066), respectively. The multi-group model of the INQ structure is modestly well-fitting across Black and White offenders, and both groups tended to score in a similar pattern. Thus, the 2-factor structure is maintained for each group, indicating configural invariance.

After configural invariance was assessed, metric invariance was examined. At the first level of metric invariance, the equality of factor loadings across groups indicates *equivalent relationships* between the latent factors and their indicators in the CFA model. Metric invariance is assessed by the type of restrictions placed on a CFA model, with more constraints used to examine stricter levels of metric invariance (see Table 4).

Table 4

*Invariance Testing Review*

Baseline Model	Parameters Constrained to be Equal	$\Delta \chi^2$ Test	Type of Invariance
Configural	None	--	--
Metric Invariance 1	Factor loadings	$\Delta \chi^2$ M1-M0	Weak Metric Invariance
Metric Invariance 2	Factor loadings and item intercepts	$\Delta \chi^2$ M2-M1	Strong Metric Invariance
Metric Invariance 3	Factor loadings, item intercepts, and residual item variances/covariances	$\Delta \chi^2$ M3-M2	Strict Metric Invariance

At the first level of metric invariance, constraints are placed only on the factor loadings on the CFA model, and subsequent constraints are placed in a step-wise fashion. Metric invariance was conducted utilizing an automated specification procedure in Amos for specifying the constraints on the model. After constraining the model,  $\chi^2$  values of the first level of metric invariance (factor loading constrained) were compared to the  $\chi^2$  values of the configural model. The fully constrained model resulted in a  $\chi^2$  of 232.781 with 116 degrees of freedom ( $p = .001$ ). A  $\chi^2$  difference test showed that the two models were not significantly different from one another ( $p = .50$ ). This statistically

significant difference indicates that weak metric invariance is present, meaning that the factor loadings do not differ between Whites and Blacks in this sample. Thus, the two-factor structure is maintained between groups, and White and Black groups in the sample scored similarly at the item level. Results of the configural and metric invariance testing can be found in Table 5.

Table 5

*Multi-group Invariance Testing Fit Indices*

	Configural Model	Constrained Model	$\Delta \chi^2$
$\chi^2$	224.538 (df = 106)	232.781 (df=116)	$p = .5$
CFI	.933	.934	
RMSEA	.056 (.045-.066)	.053 (.043-.063)	
PCLOSE	.176	.312	

Note, \* $p < .001$

Research Question Three asked, “What is the optimal total INQ cutoff score for the detection of current suicidal ideation, as measured by the BSSI?” It was hypothesized that the INQ cutoff score would identify suicidal ideation better than chance, with the BSSI used as the criterion variable. To test this hypothesis, a Receiver Operator Characteristic (ROC) analysis was employed for utilizing SPSS. ROC curves provide statistical information and graphical data regarding how accurately a measure predicts a dichotomous outcome, in this case presence versus absence of suicide ideation as measured by the BSSI. The criterion variable is the INQ-12 total score, which is a more appropriate measure of interpersonal needs for this sample.

Given the instructions offered by Beck and Steer (1991) for the clinical utility of the instrument, any total score at or above one on the BSSI indicated the need to further assess the presence of suicide ideation, and was used as the outcome variable of interest. Since this research question is aiming at improving the clinical usefulness of the INQ, this guideline was used in order to provide clinicians with a cutoff score for further assessing suicide. The BSSI outcome variable was dichotomized as a positive/negative item, with 1 showing a positive screen and indication to further assess (score at or greater than one), and 0 indicating a negative screen with no need to further assess. Descriptive analyses show that 111 (32.9% of sample included in analysis) participants screened positively on the BSSI, while the remaining 226 (67.1% of sample included in analysis) screened negatively. Sixty-two (15.5% of the total sample) participants did not complete the BSSI assessment, and were excluded from the ROC analysis.

To establish the cutoff for detecting a positive suicide screen on the BSSI, the area under the curve (AUC) was calculated for each of the two subscales. The AUC provides a measurement of how well the predictor differentiates between the obtained outcomes by calculating the proportion between 0 and 1 of the correctly classified BSSI outcome (Fawcett, 2006). The AUC values of 0 - .69 indicate that the discrimination is no better than chance. AUC values of .70 - .79 are considered good, values between .80 and .89 are considered very good, and any values at or above .90 are described as excellent (Mandrekar, 2010). Other indications of prediction accuracy are also expressed by sensitivity and specificity. Sensitivity refers to outcomes that are correctly identified (i.e., “true positives”) and specificity refers to outcomes that are correctly left not identified as positive (i.e., “true negatives.” Bewick, Cheek, & Ball, 2004).

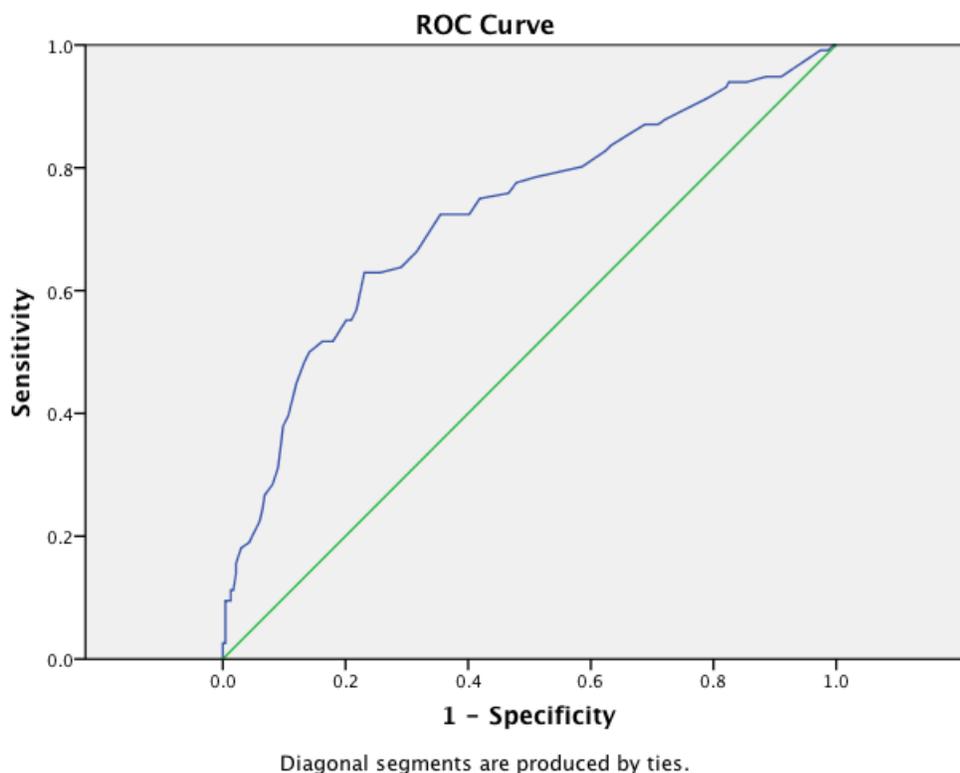
Results show that the INQ significantly predicted presence versus absence of suicide ideation from the BSSI ( $p < .001$ ). Its AUC value of .722 indicated that the INQ was good at distinguishing between positive and negative screens on the BSSI (see Table 6 for summary of statistics and Figure 1 for the ROC curve). An INQ score of Total = 31 was the optimal cutoff score (AUC = .722) for maximizing sensitivity (.724) and specificity (.645) based on the Youden's Index ( $J$ ).

Table 6

*Area Under the Curve for INQ Total Scale*

	Area	Std. Error	Asymptotic Sig.	95% Confidence Interval	
				Lower Bound	Upper Bound
Total	.722	.030	.000	.663	.781

Note: INQ: Interpersonal Needs Questionnaire



*Figure 1.* ROC curve outlining the area under the curve, sensitivity, and 1-specificity for INQ total score predicting BSSI score.

The Youden's Index ( $J$ ) is a statistical calculation that allows for the calculation of sensitivity and specificity in order to determine the cutoff score that maximizes both of these values (Ruopp, Perkins, Whitcomb, & Schisterman, 2008). It is represented in the following statistical equation:

$$J = \text{sensitivity} + \text{specificity} - 1$$

Youden's Index is often used in conjunction with clinical judgment, based on importance of maximizing sensitivity or specificity (Ruopp et al., 2008). Given that the INQ is being utilized to screen for suicidal ideation, the intent is to maximize sensitivity rather than specificity. The largest  $J$  value ( $J = .398$ ) corresponded with a cutoff score of 37, with a sensitivity value of .629 and a specificity value of .769. Given this 62.9% sensitivity rate, the second highest  $J$  value, which corresponds with a total score of 31

was deemed the ideal score for the purposes of maximizing sensitivity (.72) while not drastically reducing sensitivity (.65; see Table 7 for sensitivity, specificity, and *J* values). Using the score of 31 as a cut-point, a much stronger detection rate of 72.4% was obtained, indicating that the total score correctly classified approximately 72% of positives on the BSSI. Also, individuals who did not screen positively on the BSSI were correctly classified as being negative for suicidal ideation approximately 65% of the time. Given the clinical importance of maximizing true positive detection rate, this cut-off value leaves about 27.8% of those endorsing suicidal ideation as undetected by the INQ. See Table 7, which displays the discriminatory properties of all possible cutoff scores on the INQ.

Table 7

*Coordinates of the Curve for INQ Total Scale*

INQ-Total Score	Sensitivity	Specificity	<i>J</i>
26.5	.776	.521	.297
27.5	.759	.534	.293
28.5	.750	.581	.331
29.5	.724	.598	.322
30.5	.724	.645	.38
31.5	.664	.684	.348
32.5	.655	.692	.347
33.5	.638	.709	.338

Note: INQ: Interpersonal Needs Questionnaire

Positive and negative predictive values (PPV and NPV) are often used in tandem with specificity and sensitivity statistics in order to determine the utility of a diagnostic test (Altman & Bland, 1994). Although sensitivity and specificity tests are called *intrinsic*, meaning that they are not contingent on a sample and do not change based on the population being tested, PPV and NPV provide proportions of prevalence-based true positives and true negatives observed in a sample (Altman & Bland, 1994). Positive and negative predictive values are calculated as ratios:

$$\text{PPV} = \text{true positive rate} / (\text{true positive rate} + \text{false positive rate})$$

$$\text{NPV} = \text{true negative rate} / (\text{true negative rate} + \text{false negative rate})$$

Utilizing a cross tabulation statistic to determine PPV and NPV, among the 109 participants who screened positively on the BSSI, 86 (79%) had an INQ score of 31 or higher, indicating a PPV of 79%. Among the 228 participants who screened negatively on the BSSI, 106 (46.5%) did not reach or exceed the cutoff score on the INQ, indicating a NPV of 46.5% (see Table 8). These findings confirm that the cutoff score is more valuable at screening out negatives than at ruling in positives on the BSSI, which is consistent with findings from researchers whom assert that screening diagnostic tests with high sensitivity are ideal, as they maximize the ability to rule out a condition (Baron, 1994).

Table 8

*Prevalence, Positive and Negative Predictive Values for the INQ Cutoff Score on the BSSI.*

		BSSI		Predictive Value
		Positive (total >0)	Negative (total = 0)	
Test Outcome	Positive (total > 31)	86 (79%)	122 (53.5%)	PPV = 79%
	Negative (total < 31)	23 (21%)	106 (46.5%)	NPV = 46.5%
Total		109	228	

Note: INQ: Interpersonal Needs Questionnaire, BSSI: Beck Scale of Suicidal Ideation, PPV: positive predictive value, NPV: negative predictive value

Also calculated were likelihood ratios (LR), which aid in assessing the value of a diagnostic test, such as the INQ. The statistic gives information as to whether including a test changes the probability that an existing condition is detected (i.e., suicidal ideation; Sonis, 1999). Likelihood ratios are calculated for both the positive and negative test outcome and is a simple ratio of sensitivity and 1-specificity (+LR = sensitivity/[1-specificity]; -LR = [1-sensitivity]/specificity), with values above one meaning that the test is associated with the condition, and values below one meaning that the test is associated with the absence of a condition. Positive LR's (+LR) between 1 and 2 indicate minimal increases in the likelihood of a condition, values between 2 and 5 indicate small increases, and values above five indicate moderate to large increases. Negative LR's (-LR) have interpretations that mirror their corresponding positive number. For example, values between -1 and -2 indicate minimal decreases in the likelihood of a condition (Parikh, Parikh, Arun, & Thomas, 2009).

For the current test, likelihood ratios indicate that there is a small increase in the probability that suicidal ideation is present with an INQ score above the cutoff (+LR = 2.04). This means that those participants who meet the cutoff score on the INQ are approximately 2 times more likely to be experiencing suicidal ideation. Conversely, there is a minimal decrease in the probability that suicidal ideation is present with an INQ score below the cutoff (-LR = .43), meaning that those who score below the INQ cutoff are .43 times more likely to not be experiencing suicidal ideation (Sonis, 1999).

## CHAPTER IV

### DISCUSSION

#### Summary of Results

The current study provides support for the Interpersonal-Psychological Theory of suicide in a novel sample of incarcerated offenders. Although the current study was not directly aimed at validating the theory, the findings provide evidence, albeit incomplete, that the interpersonal needs component is related to suicidal ideation and can be utilized in clinical practice. More specifically, the ROC curve indicated a significant relationship between interpersonal needs and suicidal ideation, which is consistent with the theory's assertion that interpersonal needs, including both perceived burdensomeness and thwarted belongingness, precipitate thoughts of suicide (Joiner, 2005). However, it is important to note that the current analyses did not examine the requisite interaction of the two components of interpersonal needs in predicting suicidal ideation, which was outside the scope of the current research questions but is needed to be truly congruent with the IP theory. The currently proposed INQ-12 and INQ cutoff score of 31 provide both the empirical validity for utilizing the Interpersonal Needs Questionnaire in correctional settings as well as directions for clinical practice. For the three research hypotheses, findings were mixed: One hypothesis was fully supported and two were not supported.

Hypothesis one postulated that the two-factor structure derived from previous studies on the INQ (e.g., Marty et al., 2012) would be confirmed for this sample. The two factor structure resulting from the confirmatory factor analyses (CFAs) was maintained, but the original 15-item measure was ill-fitting and required removal of three items to improve fit. Thus, the hypothesis was partially supported. However, the

resulting 12-item measure provides an understanding of how interpersonal needs may be slightly different among offenders compared to previously studied groups.

The CFA results of the INQ in the current study show that two distinct, but similar, constructs exist and together form an overarching measure of interpersonal needs. This is similar to factor analyses conducted in various other populations (i.e., community adults [Cukrowicz et al., 2011]; college students [Freedenthal et al., 2011]; outpatient clients [Van Orden et al., 2008]) that indicate a similar relationship between PB and TB in measuring interpersonal needs. As the CFA resulted in an alteration of the INQ, the current findings suggest that measuring interpersonal needs among incarcerated individuals is somewhat unique. In comparison to an alternative INQ-12 developed by Van Orden et al. (2008), the PB subscales are exactly similar and the TB subscales have two differing items. Although it is interesting that on both measures changes from the original are found in the TB subscale, the fact that two of the seven items still differ further illustrates the uniqueness of the current sample.

Inspection of the items deleted suggests that some items tap TB much more effectively than others. From an empirical approach, items 9, 11, and 12 from the TB subscale were poorly fitting with the data and carried very low weight values, indicating that these items were not significantly related to thwarted belongingness. A theoretical approach bolsters removal of these items, as the items measure aspects of interpersonal functioning that are strongly affected by prison environments. For example, prisons do not usually provide social gatherings, and any interpersonal interactions are qualitatively different than those outside prison (Brown & Day, 2008; Wood, Alleyne, Mozova, & James, 2013). Thus, item 12, which states, "I feel like an outsider at social gatherings,"

appears to be a non-applicable question for prisoners. Similarly, item 9, which states, “I rarely interact with people who care about me,” is understandably less relevant for prisoners, as a prison environment inherently separates those convicted from their loved ones. Lastly, item 11, which broadly states, “I feel disconnected from people,” is not likely to be measuring the same construct if it were to be asked among those integrated into society. Connection to others is a unique and complex experience among prisoners (Brown & Day, 2008) and can be perceived as within the context of group membership (e.g., gangs; Wood et al., 2013) and/or within the context of disconnection from society.

In sum, interpersonal needs among prisoners are both statistically and contextually unique, largely as a function of the correctional environment, and require a specific measure of interpersonal needs such as the one supported in the current study. Given the support of the fit of the INQ-12 in the current population, future studies in interpersonal needs, PB, or TB in offenders should include the INQ-12.

The second hypothesis, which stated, “group variability will exist on the INQ, evidencing different factor structures across both White and Black ethnic groups” was not supported by the current findings. The invariance testing results indicate that the groups are invariant; they did not evidence statistically significant differences, either across latent factors (i.e., PB and TB) or between item loadings. These findings suggest that the groups endorse the constructs in a statistically similar manner and, further endorse each item on the INQ-12 similarly. This is an unexpected finding, as research points to different patterns of suicide and protective factors among Whites and Blacks (e.g., National Center for Injury Prevention and Control, 2007). Interestingly, findings by Freedenthal et al. (2011) similarly report an unexpected invariance between men and

women on the INQ-12, which is opposing to the research that suggests differing suicide trends across gender. The current findings suggest that, at least in this sample of inmates, interpersonal needs, perceived burdensomeness, and thwarted belongingness are experienced similarly across broad demographic groups, despite data suggesting the uniqueness of these groups in regard to suicide. Other potential ethnic differences, such as differences in suicidal ideation on the BSSI or the prevalence rate of suicide attempt history, are outside the scope of this study and were not assessed. Ethnic categories other than Black and White were not assessed for invariance in the current study because the number of participants in the sample endorsing an ethnicity other than Black or White was much smaller than necessary to adequately conduct statistical comparisons.

Hypothesis three stated that the INQ total cutoff score would identify suicidal ideation better than chance when using the BSSI as the criterion variable. This hypothesis was supported, and an INQ total cutoff score of 31 was deemed most useful in order to maximize sensitivity (Baron, 1994). The AIC value corresponding to the INQ indicates adequacy of the measure in predicting suicide. Thus, the INQ total is not strongly predictive and does have limitations, especially in regard to specificity. The specificity (.65) value is relatively low, and indicates that the INQ, on average, would perform rather poorly in regard to identifying negatives.

To illustrate the positive and negative predictive values, out of 100 negative screens on the BSSI, the INQ would incorrectly identify 54 as positives in the current sample. When directly examining how the cut score performed in identifying positives, the PPV of 79% indicates that the measure identified 79% of positives correctly and overlooked approximately 20% of the sample who screened positively on the BSSI. The

NPV shows that the measure identified 46.5% of the true negatives correctly. These values indicate greater sensitivity and less accurate specificity, and can provide more confidence in negative screens than positive ones. Given the importance and ramifications of suicide screening, a test with a high level of sensitivity is ideal in order to minimize false negatives (Baron, 1994).

Likelihood ratios also add interpretive value when examining the utility of the INQ cut score. The +LR indicate that a positive screen on the INQ provides a small, but meaningful, increase in probability of suicidal ideation. Thus, a two-fold increase in risk for suicidal ideation is associated with a positive screen on the INQ (i.e., a score of 31 or higher). As expected, the -LR is less compelling, indicating that a negative screen on the INQ (i.e., a score below 31) is associated with a 43% decrease in risk for suicidal ideation. Taken together with the sensitivity, specificity, PPV, and NPV, clinical interpretations of the INQ should place more confidence on a negative screen than on a positive screen as the test has good sensitivity to suicidal ideation. Thus, positive screens on the INQ should prompt further investigation in order to more confidently rule in suicidal ideation.

#### Implications for Research and Practice

Although the field has recognized a vital need to reduce suicide in offenders (Pompili et al., 2009), the literature on offender suicide has been inadequate. A significant number of studies have been published on examining both static (e.g., age) and dynamic (e.g., depression) risk factors for suicide, but very few have offered a theoretical lens for understanding suicide and suicide risk (Pompili et al., 2009). Few, if any, studies to date have offered evidence for a theoretical approach to understanding and conceptualizing

suicide in inmates beyond a single risk factor. For example, the construct of “psychache” has been posited as a dynamic single factor of psychological distress that contributes to suicide risk in offenders and represents global psychological pain (Mills, Green, & Reddon, 2005). Although understanding variables, such as “psychache,” that contribute to suicide is important, a theoretical conceptualization of suicide, such as the Interpersonal-Psychological Theory, offers a foundational launching point to understanding offenders’ risk for suicide in an integrative and comprehensive manner. Given the lack of a theoretical model of suicide in incarcerated offenders, the current study is a valuable addition to the field of offender mental health.

The current results support the use of the IP theory of suicide in offenders and bolsters the findings of Mandracchia and Smith (2013) as well as Simlot et al. (2013) who cited that the constructs of the theory are applicable to prison and jail populations. Similar to Mandracchia and Smith (2013), interpersonal needs were significantly related to suicidal ideation, while Mandracchia and Smith (2013) go further to identify both PB and TB as significant predictors, as the theory would suggest (Joiner, 2005). Simlot and colleagues (2013) found a strong impact of thwarted belongingness on a sample of jailed inmates in predicting reports of suicidal self-injury, while perceived burdensomeness was not significantly predictive. These results could have been impacted negatively, as the authors utilized an 18-item version of the measure of interpersonal needs (INQ-18) without testing the factor structure of the measure on a sample of jailed inmates. Given that the current study evidences that a number of thwarted belongingness items were not adequately measuring the construct, Simlot’s (2013) results could be inaccurate.

Although the current study was aimed at examining the presence of IP theory constructs in an incarcerated offender sample, it was also designed to provide important implications for clinical work in mental health within correctional settings. The current best practice guidelines offer useful recommendations for both assessment and program interventions. These guidelines, offered by the WHO (2009), emphasize the importance of initial screens to determine suicide risk, continued observation and assessment, as well as ways to detect when an inmate becomes higher-risk for suicide. These recommendations provide guidance for training of correctional staff, intake screening procedures, post-intake observation, monitoring, communication, social interventions, mental health treatment, and response procedures for suicide attempts (WHO, 2009). Intake assessments for new inmates are recommended to include a checklist of known static risk factors, including demographics, and dynamic risk factors, such as situational and psychological variables. This screening is recommended to be adjunctive to the medical exam upon arrival. The checklist also includes substance use items and items aimed at assessing psychiatric, suicide, and mental health treatment histories, as well as items meant to determine level of supportive resources, coping skills, hopelessness, shame, and guilt. According to the guidelines, if any of these items are endorsed by the inmate, a semi-structured interview is recommended to follow. Currently, the WHO does not recommend the use of assessment measures beyond this single checklist, such as a scale of suicide ideation (WHO, 2009).

Other researchers offer recommendations that are more comprehensive than those posited by the WHO. For example, Pompili et al. (2009) offer useful clinical recommendations for assessing suicide derived from clinical practice in inpatient

psychiatric settings. According to the researchers, utilizing measures of depression, suicidal ideation, and hopelessness, in addition to checklists, is valuable in tracking and documenting suicide risk. The authors posit, “In recent years, the trend in psychiatry has been away from ‘predicting’ suicide in psychiatric patients to ‘assessing’ the suicidal tendencies of psychiatric patients” (Pompili et al., 2009, p. 1158). The current study supports this trend towards clinical relevance, as the findings offer guidelines for assessing suicidal ideation.

Specific guidelines have been offered by researchers for a number of reasons. Firstly, prison suicide is a highly prevalent phenomenon, and correctional staff have the potential to intervene and preempt suicide behaviors. Secondly, despite the presence of mental health professionals in correctional settings, suicide rates have continued to climb, highlighting the difficulty in assessing the fluctuating and complex nature of suicidal ideation (Pompili et al., 2009). Thirdly, observing or becoming aware of an attempted or completed suicide has deleterious effects on other inmates. Specifically, psychological deterioration and heightened risk for suicide are common responses among bereaved or traumatized prisoners after a suicide event (McKenzie & Keane, 2007). Given these difficulties, the current findings render specific considerations to improve upon the already established best practice guidelines for addressing suicide in prisons.

#### *Assessment*

The consensus in correctional suicide research is that assessing suicide is difficult and fraught in limitations inherent to the prison setting. As discussed previously, suicidal ideation is a precarious mental state in that it can be fluid (intermittent) or continuously experienced (Pompili et al., 2009) and impacted by feelings of perceived burdensomeness

and thwarted belongingness (Joiner, 2005). Having an understanding of every inmate's real-time suicide risk level is impossible. Researchers Baillargeon and colleagues (2009) examined suicides within the expansive prison system of Texas and noted that some individuals who complete suicide are not identified as having a mental health problem by mental health professionals before the suicide. The authors posited that a commitment to rigorous screening of mental health problems and suicide risk factors is of high importance as the problem of suicide persists in prison settings despite attempts to screen and treat inmates.

Further, offenders may be motivated to falsely report improvements in depression or fail to "confess" to suicidal thoughts, whether these motivations are accurate or inaccurate (e.g., belief that mental health care may affect consideration for parole; Correia, 2000; Way et al., 2005). For example, Way, Kaufman, Knoll, and Chlebowski (2013) stated that only 42% of incarcerated offenders reported that they would be likely to disclose suicidal ideation to facility staff. In other cases, an improvement in depression may alleviate the symptoms of lethargy and listlessness which, counterintuitively, promotes one's drive and ability to engage in suicide behaviors. In these instances, the inmate that reports a reduction in depressive symptoms may be provided less monitoring as a result, which may further the risk for suicide (Morgan & Priest, 1991). In light of these considerations, an even stronger emphasis should be placed on accurately assessing for suicide risk factors at intake as it is required of all inmates. Further, the INQ provides an additional contribution in that it is not a face-valid assessment of suicide, unlike suicide checklists. More specifically, the items appear as less obvious and intrusive when compared to assessments that target ideations about

ending one's life directly. The lack of transparency of the measure adds to its value in prison settings.

In light of these complex factors, multiple means of assessment is vital in augmenting the success of assessing for suicide risk. Although some inmate intake assessment protocols only consist of a suicide checklist (e.g., WHO, 2009), others encourage the use of multiple measures to better capture suicide risk (e.g., Pompili et al., 2009). The INQ is a promising measure to include in such assessments because it has some preliminary evidence of validity among offenders. Within the context of sequential assessment, the INQ can be administered initially to inmates as a screen for suicide risk. Because it has been even further shortened to 12 items, the measure is brief and can be administered by simply including it in intake paperwork. It can be scored quickly and efficiently by summing items, and compared to the cutoff score supported by the current findings (total = 31). If this total score is met or exceeded, additional interviews and assessments can be initiated. Given that the measure has a high rate of false positives, it is not recommended to utilize this measure alone in screening inmates. In light of the measure's relatively high false positive rate, a positive on the INQ should carry a careful consideration of the presence of suicidal ideation by the mental health professional conducting such screenings. Conversely, a negative on the INQ should not fully rule out suicidal ideation. In sum, the measure can provide a higher level of confidence when the score indicates a negative screen, as the measure is better suited for ruling out suicidal ideation and can bolster the results of other assessments on which an individual denies suicidal ideation.

### *Treatment Programming*

Findings by Way et al. (2013) indicate that prisoners experiencing suicidal ideation prefer speaking individually with mental health professionals and family members about their mental health problems as opposed to discussing it in group therapy, being placed under observation, or undergoing a suicide risk assessment protocol. An individual therapeutic context may be most beneficial in regard to targeting mental health problems and intervening on suicidal ideation. In these contexts, the INQ can be easily utilized as an informative measure in order to improve and alter treatment. Using the measure as way to determine interventional targets, the INQ has the potential to “launch” therapeutic interventions as it provides information about what cognitive distortion and perspectives may be salient to an individual. For example, if an inmate scores high on the Perceived Burdensomeness subscale on the INQ, a mental health professional can implement interventions to specifically target this perception of burdensomeness. Using this approach not only has the potential to improve mood symptoms more broadly, but also bolster thinking to prevent or reduce suicidal ideation.

A best practice guideline for psychotherapy, regardless of setting, includes the utilization of treatment outcome assessments to track therapeutic progress (Lambert et al., 2006). Outcome assessment allows practitioners to benchmark progress that has been made and the severity of symptoms throughout treatment, and in particular at the beginning and end of treatment (Lambert et al., 2006). With this consideration, the INQ is an excellent assessment to employ throughout treatment with offenders who report suicidal ideation or mental health symptoms more generally. The INQ can also be utilized in cases where suicidal ideation has been identified or with offenders who report

problems similar to interpersonal needs over the course of therapy. A reduction in INQ total and subscale scores can indicate that psychotherapy interventions have been successful or helpful to the prisoner. In sum, utilizing the INQ as an outcome assessment measure adds more strategic value to the measure in addition to applicability to screening protocols, standardized assessments of prisoners at high risk for suicidal ideation, and as a guide in mental health treatment of offenders.

### *Limitations*

Limitations of the study should be carefully considered in interpreting the findings and subsequent implications. Firstly, the study relies on self-report of prisoners without the consideration of prison files kept by the correctional facility at which the study was conducted. Although studies suggest that prisoners are motivated to be less forthcoming about their mental health or suicidal ideation with staff when negative ramifications are possible (e.g., Correia, 2000), the potential exists that offenders may not respond accurately to the current assessments even though anonymity was ensured. Additionally, the current study utilizes a sample of adult males; thus, any findings should not be deemed as applicable to female or juvenile prisoners. The sample was largely Black and White and is limited in regard to conclusions regarding inmates of other ethnic identities.

In regard to other limitations of the current study, the analyses did not account for past suicidal self-injurious or past non-suicidal self-injurious behaviors. Although those with past suicide attempts may have unique experiences that could potentially impact current suicidal ideation and interpersonal needs as measured by the BSSI and INQ, past non-suicidal self-injurious behaviors and past suicidal self-injurious behaviors were not

statistically examined. Further, the complete IP Theory was not evaluated in the sample as the current study did not examine acquired capability for suicide.

#### Future Directions

In order to address these limitations, future work is needed to determine what other demographic differences, whether age, gender, or otherwise, may be statistically significant when assessing interpersonal needs in offenders. Although the current study found no ethnic differences in suicide ideation, confirmation of this finding by replication is an appropriate subsequent area of study. Similarly, the current INQ-12 needs additional validation in order to improve confidence in the revised 12-item assessment. The current study offers INQ cutoff scores that are suggested to be clinically useful. Repeated measures designs could be valuable in assessing interpersonal needs in offenders across time in order to determine what changes occur in scores before suicidal ideation occurs. Also, longitudinal designs would allow for INQ scores to be gathered before suicide ideation or behaviors occur for additional analysis of the performance of the INQ. Also, methodologies that include chart review and/or clinical interview would be particularly useful in this regard in order to gain more data to accurately assess suicide risk and to gain a fuller picture of suicide history.

Additional work should be done to confirm the INQ-12 in a correctional sample, preferably one with broader ethnic diversity. The current study has implicated a new measure of interpersonal needs for use with incarcerated male offenders; thus, replication is essential in making confident conclusions in regard to validity on the measure. Further, additional study is needed to account for acquired capability for suicide in relation to interpersonal needs in predicting suicide ideation and behaviors in order to

fully validate the IP Theory in incarcerated offenders. Lastly, further work could be aimed at examining the utilization and usefulness of the INQ in therapeutic contexts or as an outcome measure in prison programs.

## APPENDIX A

## DEMOGRAPHIC QUESTIONNAIRE

Today's Date: \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Your date of birth (dd/mm/yyyy): \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Age: \_\_\_\_\_

Race/Ethnicity (choose one):

- |   |  |
|---|--|
| <input type="checkbox"/> African American/Black           | <input type="checkbox"/> Asian/Asian American            |
| <input type="checkbox"/> Caucasian/White                  | <input type="checkbox"/> Hispanic/Latino(a)              |
| <input type="checkbox"/> Indian                           | <input type="checkbox"/> Native American/American Indian |
| <input type="checkbox"/> Native Hawaiian/Pacific Islander | <input type="checkbox"/> Other                           |

Specify: \_\_\_\_\_

Highest grade in school completed:

- Less than grade school (less than 8<sup>th</sup> grade)
- Grade school (8<sup>th</sup> grade)
- High school diploma or GED (12<sup>th</sup> grade)
- Some college, but no degree
- College degree (AA, BA, BS, etc.)
- Advanced degree (MA, MS, PhD, MD, etc.)

Current Marital Status:

- Married
- Partnered/common law
- Separated
- Divorced
- Widowed
- Never married/single

What crime(s) are you currently incarcerated for?

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_
- 4) \_\_\_\_\_
- 5) \_\_\_\_\_

What is the length of your current sentence?

\_\_\_\_\_

How much time have you served (in jail or prison) on your current sentence?

\_\_\_\_\_

How much more time will you serve on your current sentence?

\_\_\_\_\_

How much total time have you served (in jail or prison) throughout your life?

---

Are you currently diagnosed with a mental health disorder?  Yes  No

If yes, please list your most recent diagnosis/diagnoses

---

Are you currently receiving mental health services?  Yes  No

If yes, please describe

---

Are you currently receiving psychiatric medications (medications for mental health reasons)?

Yes  No If yes, please list type, dose, and how often you take them

Name	Dosage	Frequency
<hr/>	<hr/>	<hr/>

Have you ever hurt yourself on purpose with the intention of dying (even if you were not totally sure you wanted to die)?  Yes  No

If yes, about how many times in your life?

---

How many times in the past year?

---

Please check all the methods of suicide you have used in your life:

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> Cutting any part of your body | <input type="checkbox"/> Stabbing yourself              | <input type="checkbox"/> Jumping from a high place |
| <input type="checkbox"/> Overdosing on illegal drugs   | <input type="checkbox"/> Overdosing on medications      | <input type="checkbox"/> Swallowing poison         |
| <input type="checkbox"/> Shooting yourself with a gun  | <input type="checkbox"/> Hanging or strangling yourself | <input type="checkbox"/> Drowning                  |
| <input type="checkbox"/> Other:                        | <input type="checkbox"/> Other:                         | <input type="checkbox"/> Other:                    |

---



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---

Have you ever hurt yourself on purpose, but you DID NOT intend to die?  Yes  No

If yes, about how many times in your life?

---

How many times in the past year?

---

Please check all the methods of self-harm you have used in your life:

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Cutting any part of body     | <input type="checkbox"/> Stabbing yourself              | <input type="checkbox"/> Jumping from a high place |
| <input type="checkbox"/> Overdosing on illegal drugs  | <input type="checkbox"/> Overdosing on medications      | <input type="checkbox"/> Swallowing poison         |
| <input type="checkbox"/> Shooting yourself with a gun | <input type="checkbox"/> Hanging or strangling yourself | <input type="checkbox"/> Drowning                  |
| <input type="checkbox"/> Other:                       | <input type="checkbox"/> Other:                         | <input type="checkbox"/> Other:                    |
- 
- 
-

## APPENDIX B

## INTERPERSONAL NEEDS QUESTIONNAIRE-15 (INQ-15)

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 have been feeling **recently**. Use the rating scale to find the number that best matches how you feel and circle that number. There are no right or wrong answers: we are interested in what *you* think and feel.

1	2	3	4	5	6	7
<i>Not at all true for me</i>						<i>Very true for me</i>

- \_\_\_ 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 I am a burden on society.
- \_\_\_ 4. These days I think my death would be a relief to the people in my life.
- \_\_\_ 5. These days I think the people in my life wish they could be rid of me.
- \_\_\_ 6. These days I think I make things worse for the people in my life.
- \_\_\_ 7. These days, other people care about me.
- \_\_\_ 8. These days, I feel like I belong.
- \_\_\_ 9. These days, I rarely interact with people who care about me.
- \_\_\_ 10. These days, I am fortunate to have many caring and supportive friends.
- \_\_\_ 11. These days, I feel disconnected from other people.
- \_\_\_ 12. These days, I often feel like an outsider in social gatherings.
- \_\_\_ 13. These days, I feel that there are people I can turn to in times of need.
- \_\_\_ 14. These days, I am close to other people.
- \_\_\_ 15. These days, I have at least one satisfying interaction every day.

## APPENDIX C

## BECK SCALE FOR SUICIDAL IDEATION (BSSI)

Please carefully read each group of statements below. Circle the one statement in each group that best describes how you have been feeling for the **past week**, including today. Be sure to read all of the statements in each group before making a choice.

## Part 1

- \_\_\_\_\_ 1. 0 = I have a moderate to strong wish to live  
           1 = I have a weak wish to live.  
           2 = I have no wish to live.
- \_\_\_\_\_ 2. 0 = I have no wish to die  
           1 = I have a weak wish to die.  
           2 = I have a moderate to strong wish to die.
- \_\_\_\_\_ 3. 0 = My reasons for living outweigh my reasons for dying  
           1 = My reasons for living or dying are about equal  
           2 = My reasons for dying outweigh my reasons for living
- \_\_\_\_\_ 4. 0 = I have no desire to kill myself  
           1 = I have a weak desire to kill myself  
           2 = I have a moderate to strong desire to kill myself
- \_\_\_\_\_ 5. 0 = I would try to save my life if I found myself in a life-threatening situation.  
           1 = I would take a chance on life or death if I found myself in a life threatening situation  
           2 = I would not take the steps necessary to avoid death if I found myself in a life-threatening situation

\*\*\* If you have marked 0 for both #4 AND #5 above, then skip down to #20.  
 \*\*\* If you marked either 1 OR 2 for #4 OR #5, then continue to #6.

## Part 2

- \_\_\_\_\_ 6. 0 = I have brief periods of thinking about killing myself which pass quickly  
           1 = I have periods of thinking about killing myself which last for moderate amounts of time.  
           2 = I have long periods of thinking about killing myself.
- \_\_\_\_\_ 7. 0 = I rarely or only occasionally think about killing myself.  
           1 = I have frequent thoughts about killing myself.  
           2 = I continuously think about killing myself
- \_\_\_\_\_ 8. 0 = I do not accept the idea of killing myself  
           1 = I neither accept nor reject the idea of killing myself  
           2 = I accept the idea of killing myself
- \_\_\_\_\_ 9. 0 = I can keep myself from committing suicide  
           1 = I am unsure that I can keep myself from committing suicide  
           2 = I cannot keep myself from committing suicide.

- \_\_\_\_\_ 10. 0 = I would not kill myself because of my family, friends, religion, possibly injury from an unsuccessful attempt, etc.  
 1 = I am somewhat concerned about killing myself because of my family, friends, religion, possible injury from an unsuccessful attempt, etc.  
 2 = I am not or only a little concerned about killing myself because of my family, friends, religion, possible injury from an unsuccessful attempt, etc.
- \_\_\_\_\_ 11. 0 = My reasons for wanting to commit suicide are primarily aimed at influencing other people, such as getting even with people, making people happier, making people pay attention to me, etc.  
 1 = My reasons for wanting to commit suicide are not only aimed at influencing other people, but also represent a way of solving my problems  
 2 = My reasons for wanting to commit suicide are primarily based upon escaping my problems
- \_\_\_\_\_ 12. 0 = I have no specific plan about how to kill myself  
 1 = I have considered ways of killing myself, but have not worked out the details  
 2 = I have a specific plan for killing myself
- \_\_\_\_\_ 13. 0 = I do not have access to a method or an opportunity to kill myself  
 1 = The method that I would use for committing suicide takes time, and I really do not have a good opportunity to use this method  
 2 = I have access or anticipate having access to the methods that I would choose for killing myself and also have or shall have the opportunity to use it.
- \_\_\_\_\_ 14. 0 = I do not have the courage or the ability to commit suicide  
 1 = I am unsure that I have the courage or ability to commit suicide  
 2 = I have the courage and ability to commit suicide
- \_\_\_\_\_ 15. 0 = I do not expect to make a suicide attempt  
 1 = I have made some preparations for committing suicide  
 2 = I have almost finished or completed my preparations for committing suicide
- \_\_\_\_\_ 16. 0 = I have made no preparations for committing suicide  
 1 = I have made some preparations for committing suicide  
 2 = I have almost finished or completed my preparations committing suicide
- \_\_\_\_\_ 17. 0 = I have not written a suicide note  
 1 = I have thought about writing a suicide note or have started to write one, but have not completed it  
 2 = I have completed a suicide note
- \_\_\_\_\_ 18. 0 = I have made no arrangements for what will happen after I have committed suicide  
 1 = I have thought about making some arrangements for what will happen after I have committed suicide.  
 2 = I have made definite arrangements for what will happen after I commit suicide
- \_\_\_\_\_ 19. 0 = I have not hidden my desire to kill myself from people  
 1 = I have held back telling people about wanting to kill myself  
 2 = I have attempted to hide, conceal, or lie about wanting to commit suicide
- \_\_\_\_\_ 20. 0 = I have never attempted suicide  
 1 = I have attempted suicide once

2 = I have attempted suicide two or more times

**\*\* If you have previously attempted suicide, please continue with the next statement group →**

\_\_\_\_\_ 21. 0 = My wish to die during the last suicide attempts was low  
moderate 1 = My wish to die during the last suicide attempts was  
2 = My wish to die during the last suicide attempts was high

***Subtotal Part 1 \_\_\_\_\_ + Subtotal Part 2 \_\_\_\_\_ = Total score***

## APPENDIX D

## CONSENT FORM

CONSENT TO TAKE PART IN A RESEARCH STUDY

The University of Southern Mississippi

This is a study about depression and suicide in adult prison inmates. The person responsible for the study is Jon Mandracchia, Ph.D. Please take your time to decide whether you want to be in this study. You are not required to be in this study, and if you decide not to be, there are no negative consequences. If you have any questions, you may ask the researchers at any time.

This project and this consent form have been reviewed by the Institutional Review Board, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research participant should be directed to the Chair of the Institutional Review Board, The University of Southern Mississippi, 118 College Drive #5147, Hattiesburg, MS 39406-0001, (601) 266-6820.

**Why is this study being done?** This study is being done to learn more about why people who are in prison become depressed and why some of those people experience thoughts of suicide. It is also important to know more about those people who actually act on those thoughts and attempt suicide or hurt themselves on purpose.

**Why am I being asked to be in this study? Who is participating in this study?** You are being asked to be in this study because you are 18 years of age or older and are currently incarcerated in the Mississippi Department of Corrections. Having mental health problems or having experience with thoughts of suicide or past suicide attempts is NOT a requirement to be in this study. Approximately 350 people will be in this study.

**What will happen during this study? How long will this study take?** If you choose to be in this study, you will fill out a number of questionnaires that ask questions about depression, suicide, and other related things. Completing these questionnaires should take about one hour.

**What are the risks of participating (or not participating) in this study?** There is no reason to believe that being in the study will hurt you. Some of the questions may lead some people to feel sad or upset. You may refuse to answer any of the questions, and you may stop your participation in the study at any time.

If you feel upset or have thoughts of suicide while filling out the forms, you should tell one of the researchers or a Corrections Officer (CO) or other staff member who is nearby. The researchers can't give you mental health treatment or therapy, but will help you get help from your regular doctors and other staff (e.g., somebody from psychology or mental health). If you become depressed or have suicidal thoughts after you leave the testing session, you should tell a staff member: psychologist, nursing staff, CO, or anybody else who can get you the help you may need.

Your responses to the questionnaires are confidential. We will not use them to see if you need any help with depression or suicide. Also, because we do not keep track of who participates in the study, your choice to participate or not participate in the study can't be used in any way during parole decisions (either to help or hurt your chances of getting parole). The parole board will not find out whether you did this study or not.

**Are there any benefits to me if I participate in this study?** MDOC policy states that you cannot receive compensation for participation in this research study. However, you may benefit by gaining understanding of your thoughts and feelings. By participating in this study, you will be helping us understand the problems of those who are in prison, which will be used to help treat people experiencing these types of problems.

**What about confidentiality and the privacy of my records?** Any information you provide on the questionnaires while in this study will be confidential. The only place you should write your name is this consent form. You should not write your name on any of the questionnaires. The consent form and the questionnaires will be kept separate and your answers to the questions will not be identified as yours. All the questionnaires will be kept under lock and key. Also, you will be provided with a Certificate of Confidentiality. This Certificate of Confidentiality is provided by the National Institutes of Health and protects against things like court orders and subpoenas or other legal demands for information that can be linked back to you. You will receive a copy of this Certificate and this Consent Form. The researchers will not give any information you provide on the questionnaires to any other persons or organizations. While your responses to the questionnaires will not be shared with MDOC staff or officials in any circumstances, we may have to break confidentiality based on what you tell the researcher. If you tell the researcher that you are having thoughts of suicide, we will inform the appropriate staff, such as a CO or your regular doctors. This will happen only when you tell the researcher about this and not based on what you write on the questionnaires. So if you feel like you need any form of help, please tell the researcher or other appropriate prison staff, such as a CO or one of your doctors.

Also, it is your choice whether you want to be in this study and you can decide not to be in this study without punishment. COs and other staff will be nearby to maintain safety, so they may know who volunteers and who refuses to be in the study. Although this cannot be avoided, the researchers will tell staff about your right to refuse and that it is important not to punish people for refusing to be in the study.

**What if I am hurt by participating in this study?** There's no reason to believe that being in the study will hurt you. However, it is possible that the research may involve risks that are unforeseeable. If the research causes you any injury (physical or psychological), you should seek help from your regular physical and mental health care providers at MDOC.

**Can someone else end my participation in this study?** If you choose to be in this study, you may have to stop if a MDOC staff member or the researcher tells you to. It is important that the research does not interfere with the safe functioning of the correctional environment.

**What are my rights as a voluntary participant? Can I stop being in the study?** Taking part in this study is your choice. You may choose not to be in it and may leave the study at any time. If

you decide not to participate in this study, there will be no punishment, and it will not affect your care, benefits, or rights in any way.

**What if I have questions?** If you have any questions about the research, you can ask the researchers during the session. If you have questions after you finish and leave, you can send a letter to Dr. Jon Mandracchia, at The University of Southern Mississippi, 118 College Dr. #5025, Hattiesburg, MS 39406.

**Your signature indicates that this research study has been explained to you, that you've been given the opportunity to ask questions, and that you agree to take part in this study.**

\_\_\_\_\_  
Printed Name of Subject

\_\_\_\_\_  
Printed Name of Presenter/Witness

\_\_\_\_\_  
Signature of Subject

\_\_\_\_\_  
Signature of Presenter/Witness

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

## REFERENCES

- Adams, K., & Ferrandino, J. (2008). Managing mentally ill inmates in prisons. *Criminal Justice and Behavior, 35*(8), 913–927. doi:10.1177/0093854808318624
- Altman, D., & Bland, M. (1994). Diagnostic tests 1: Sensitivity and specificity. *British Medical Journal, 309*, 102.
- Anestis, M., Fink, E., Bender, T., Selby, E., Smith, A., Witte, T., & Joiner, T. (2011). Re-considering the association between negative urgency and suicidality. *Personality and Mental Health, 6*, 138-146.
- Anestis, M. D., & Joiner, T. E. (2011). Examining the role of emotion in suicidality: Negative urgency as an amplifier of the relationship between components of the interpersonal-psychological theory of suicidal behavior and lifetime number of suicide attempts. *Journal of Affective Disorders, 129*(1-3), 261–9. doi:10.1016/j.jad.2010.08.006
- Anno, B. (1985). Patterns of suicide in the Texas Department of Corrections. *Journal of Prison Jail Health, 5*, 82-93.
- Baillargeon, J., Penn, J. V., Thomas, C. R., Temple, J. R., Baillargeon, G., & Murray, O. J. (2009). Psychiatric disorders and suicide in the nation's largest state prison system. *Journal of the American Academy of Psychiatry and Law Online, 37*, 188-193.
- Baron, J. (1994). Too bad it isn't true. *Medical Decision Making, 14*, 107. DOI: 10.1177/0272989X9401400202
- Beck, A. (1976). *Cognitive therapy and emotional disorders*. New York, NY: International Universities Press.

- Beck, A., Brown, G., Berchick, R., Stewart, B., & Steer, R. (1990). Relationship between hopelessness and ultimate suicide: A replication with psychiatric outpatients. *American Journal of Psychiatry*, *147*, 190–195.
- Beck, A., Brown, G., & Steer, R. (1997). Psychometric characteristics of the Scale for Suicide Ideation with psychiatric outpatients. *Behavior Research and Therapy*, *35*, 1039-1046. doi: <http://dx.doi.org/10.1016/j.bbr.2011.03.031>
- Beck, A., & Steer, R. (1991). *Manual for Beck Scale for Suicidal Ideation*. New York, NY: Psychological Corporation.
- Bewick, A., Cheek, S., & Ball, P. (2004). Statistics review 8: Qualitative data – tests of association. *Critical Care*, *8*, 46-53.
- Bollen, K., & Curran, P. (2006). *Latent curve models: A structural equation perspective*. New York, NY: Wiley.
- Browne, M., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.) *Testing structural equation models* (pp. 136-162). Newbury Park, CA: Sage.
- Bryan, C. J. (2011). The clinical utility of a brief measure of perceived burdensomeness and thwarted belongingness for the detection of suicidal military personnel. *Journal of Clinical Psychology*, *67*, 981–92. doi:10.1002/jclp.20726
- Bryan, C., & Anestis, M. (2011) Reexperiencing symptoms and the Interpersonal-Psychological Theory of Suicidal Behavior among deployed service members evaluated for traumatic brain injury. *Journal of Clinical Psychology*, *67*, 856-865.

- Byrne, B. (2010). *Structural equation modeling with Amos, basic concepts, applications, and programming*. (2nd ed.) New York, NY: Routledge.
- Brown, S., & Day, A. (2008). The role of loneliness in prison suicide: Prevention and management. *Journal of Offender Rehabilitation, 47*, 433-449.
- Carli, V., Jovanovic, N., Podlesek, A., Roy, A., Rihmer, Z., Maggi, F....(2010). The role of impulsivity in self-mutilators, suicide ideators, and suicide attempters: A study of 1265 male incarcerated individuals. *Journal of Affective Disorders, 3*, 116-122.
- Carothers, C. (2003). *Overview of mental health issues in state prisons and county jails. Presentation to Commission on Improving the Sentencing, Supervision, Management, and Incarceration of Prisoners*. Retrieved May 10, 2013, from <http://www.main.gov/spo/sp/commission/docs/Overview%20od%20Mnetal%20Health%20Issues.ppt>
- Carson, A., & Sabol, W. (2012). *Prisoners in 2011*. Bureau of Justice Statistics. <http://www.bjs.gov/index.cfm?ty=pbdetails>. Accessed February 2013.
- Castle, K., Conner, K., Kaukeinen, K., & Tu, X. (2012). Perceived racism, discrimination, and acculturation in suicidal ideation and suicide attempts among black young adults. *Suicide and Life-Threatening Behavior, 31*, 342-353.
- Center for Disease Control and Prevention. (2009). *Suicide fact sheet*. <http://www.cdc.gov/violenceprevention/pdf/suicidefactsheet-a.pdf>. Accessed December 2014.
- Center for Disease Control and Prevention, National Center for Injury Prevention and Control. (2010). Web-based injury statistics query and reporting system

(WISQARS): [www.cdc.gov/ncipc/wisqars](http://www.cdc.gov/ncipc/wisqars)

- Chakravarthy, B., Frumin, E., & Lotfipour, S. (2013). Increasing suicide rates among middle-age persons and interventions to manage patients with psychiatric complaints. *Western Journal of Emergency Medicine, 15*, 11-13.
- Correia, K. (2000). Suicide assessment in the prison environment: A proposed protocol. *Criminal Justice and Behavior, 27*, 581-599. doi:10.1177/0093854800027005003
- Cox, G. (2003). Screening inmates for suicide using static risk factors. *The Behavior Therapist, 26*, 212-214.
- Crosby, A. E., Ortega, L., & Melanson, C. (2011). *Self-directed violence surveillance: Uniform definitions and recommended data elements, Version 1.0*. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control.
- Cukrowicz, K., Cheavens, J., Van Orden, K., Ragain, R., & Cook, R. (2011). Perceived burdensomeness and suicide ideation in older adults. *Psychology and Aging, 26*, 331-338.
- Daigle, M., Alarie, M., & Lefebvre, P. (1999). The problem of suicide among female prisoners. *Forum on Corrections Research, 11*, 41-45.
- Daniel, A., & Fleming, B. (2005). Suicides in a state correctional system, 1992-2002: A review. *Journal of Correctional Health Care, 12*, 24-35.  
doi:10.1177/1078345806287541
- Earle, K. (1994). Characteristics of outpatient suicides. *Psychiatric Services, 45*, 123-126.

- Enders, C. (2001). A primer on maximum likelihood algorithms for use with missing data. *Structural Equation Modeling*, 8, 128-141.
- Fawcett, T. (2006). An introduction to ROC analysis. *Pattern Recognition Letters*, 27, 861-874.
- Freedenthal, S., Lamis, D., Osman, A., Kahlo, D., & Gutierrez, P. (2011). Evaluation of the psychometric properties of the Interpersonal Needs Questionnaire-12 in samples of men and women. *Journal of Clinical Psychology*, 67(6), 609–23.  
doi:10.1002/jclp.20782
- Galanek, J. D. (2013). The cultural construction of mental illness in prison: A perfect storm of pathology. *Culture, Medicine and Psychiatry*, 37(1), 195–225.  
doi:10.1007/s11013-012-9295-6
- George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference*. 11.0 update (4th ed.). Boston, MA: Allyn & Bacon.
- Gutierrez, P., Rodriguez, P., & Garcia, P. (2001). Suicide risk factors for young adults: Testing a model across ethnicities. *Death Studies*, 25, 319-340.
- Hayes, L. (1995). Prison suicide: An overview and guide to prevention. *Prison Journal*, 75, 431-456.
- Hayes, L. (2010). *National study of jail suicide 20 years later*. Washington, DC: National Institute of Corrections.
- He, X., Holzer, C., Nathan, P., & Veasey, S. (2001). Factors in prison suicide: One year study in Texas. *Journal of Forensic Sciences*, 46, 896-901.

- Hirsch, J., Visser, P., Chang, E., & Jeglic, E. (2012). Race and ethnic differences in hope and hopelessness as moderators of the association between depressive symptoms and suicidal behavior. *Journal of American College Health, 60*, 115-127.
- Hunt, I. M., Robinson, J., Bickley, H., Meehan, J., Parsons, R., McCann, K., & Appleby, L. (2003). Suicides in ethnic minorities within 12 months of contact with mental health services. *British Journal of Psychiatry, 183*, 155–160.
- Jahn, D., Cukrowicz, K., Linton, K., & Prabhu, F. (2011). The mediating effect of perceived burdensomeness on the relationship between depressive symptoms and suicide ideation in a community sample of older adults. *Aging and Mental Health, 15*, 214-220.
- Joiner, T. (2005). *Why people die by suicide*. Cambridge, MA: Harvard University Press.
- Joiner, T., Hollar, D., & Van Orden, K. (2006). On Buckeyes, Gators, Super Bowl Sunday, and the Miracle on Ice: “Pulling together” is associated with lower suicide rates. *Journal of Social & Clinical Psychology, 25*, 179-195.
- Joiner, T., Pettit, J., Walker, R., Voelz, Z., Cruz, K., Rudd, M., & Lester, D. (2002). Perceived burdensomeness and suicidality: Two studies on the suicide notes of those attempting and those completing suicide. *Journal of Social & Clinical Psychology, 21*, 531-545.
- Joiner, T., Van Orden, K., Witte, T., Selby, E., Ribeiro, J., Lewis, R., & Rudd, M. (2009). Main predictions of the interpersonal-psychological theory of suicidal behavior: Empirical tests in two samples of young adults. *Journal of Abnormal Psychology, 118*, 634-646.

- Kaplan, M. S., Huguet, N., McFarland, B. H., & Newsom, J. T. (2007). Suicide among male veterans: A prospective population-based study. *Journal of Epidemiology and Community Health, 61*, 619–624. doi:10.1136/jech.2006.054346
- Kline, P. (1999). *The handbook of psychological testing* (2nd ed.). London, UK: Routledge.
- Kung, H., Pearson, J., & Wei, R. (2005). Substance use, firearm availability, depressive symptoms, and mental health service utilization among White and African American suicide decedents aged 15-64. *Annals of Epidemiology, 16*, 614-621.
- Lambert, M., Whipple, J., Hawkins, E., Vermeersch, D., Nielsen, S., & Smart, D. (2006). Is it time for clinicians to routinely track patient outcomes? A meta-analysis. *Clinical Psychology, Science and Practice, 10*, 288-301.
- Lincoln, K., Taylor, R., Chatters, L., & Joe, S. (2012). Suicide, negative interaction and emotional support among black Americans. *Social Psychiatry and Psychiatric Epidemiology, 47*, 1947-1958.
- Linehan, M. (1993). *Cognitive Behavioral Treatment of Borderline Personality Disorder*. New York, NY: Guilford Press.
- Leong, F., & Leach, M. (2007). Ethnicity and suicide in the United States: Guest editors' introduction. *Death Studies, 31*, 393-398.
- Magaletta, P. R., Patry, M. W., Wheat, B., & Bates, J. (2008). Prison inmate characteristics and suicide attempt lethality: An exploratory study. *Psychological Services, 5*(4), 351–361. doi:10.1037/1541-1559.5.4.351

- Mandracchia, J., & Smith, P. (2013). Interpersonal Psychological Theory of Suicide in male inmates. Unpublished manuscript, The University of Southern Mississippi, Hattiesburg, MS.
- Mandrekar, J. (2010). Receiver operating characteristic curve in diagnostic test assessment. *Journal of Thoracic Oncology*, *5*, 1315-1317.
- Mann, J. J. (2002). A current perspective of suicide and attempted suicide. *Annals of Internal Medicine*, *136*(4), 302–11. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/11848728>
- Marty, M., Segal, D., Coolidge, F., & Klebe, K. (2012). Analysis of the psychometric properties of the Interpersonal Needs Questionnaire (INQ) among community-dwelling older adults. *Journal of Clinical Psychology*, *68*(9), 1008–18. doi:10.1002/jclp.21877
- McCullumsmith, C., Clark, B., Perkins, A., Fife, J., & Cropsey, K. (2012). Gender and racial differences for suicide attempters and ideators in a high risk community corrections population. *Crisis*, *34*, 50-62.
- McIntosh, J. (2010). *U.S.A. suicide 2007: Official final data*. Washington, DC: American Association of Suicidology, <http://www.suicidology.org>, Retrieved on January 2013.
- McKenzie, N., & Keane, M. (2007). Contribution of inmate suicide to suicide rate in prisons. *Suicide and Life Threatening Behavior*, *37*, 538-542.
- Menninger, K. (1938). *Man against himself*. New York, NY: Harcourt Brace.
- Meyers, L., Gamst, G., & Guarino, A. (2006). *Applied multivariate research: Design and interpretation*. Thousand Oaks, CA: Sage Publications.

- Mills, J. F., Green, K., & Reddon, J. R. (2005). An evaluation of the Psychache Scale on an offender population. *Suicide and Life Threatening Behavior, 35*, 570-580.
- Morgan, O., Kuramoto, F., Emmet, W., Stange, J., & Nobunaga, E. (2014). The impact of the Affordable Care Act on behavioral health care for individuals from racial and ethnic communities. *Journal of Social Work in Disability and Rehabilitation, 2*, 123-134, doi: 10.1080/1536710X.2013.870518.
- Morgan, H., & Priest, P. (1984). Assessment of suicide risk in psychiatric inpatients. *Brief Journal of Psychiatry, 145*, 467-469.
- Morgan, H., & Priest, P. (1991). Suicide and other unexpected deaths among psychiatric in-patients. *British Journal of Psychiatry, 158*, 368-374.
- Moscicki, E. (1994). Gender differences in completed and attempted suicides. *Annals of Epidemiology, 4*, 152-158.
- National Center for Injury Prevention and Control. (2007). Suicide: A fact sheet. [www.cdc.gov/ncipc/factsheets/suifacts.htm](http://www.cdc.gov/ncipc/factsheets/suifacts.htm), Retrieved January 2013.
- Osvaldo, A., Draper, B., Snowdon, J., Lautenschlager, N., Pirkis, J., & Byrne, G. (2012). *British Journal of Psychiatry, 201*, 466-472.
- Page, A., Morrell, S., Hobbs, C., Carter, G., Dudley, M., Duflou, J., & Taylor, R. (2014). Suicide in young adults: Psychiatric and socio-economic factors from a case-control study. *Biomedical Central Psychiatry, 14*, 1-9.
- Parikh, R., Parikh, S., Arun, E., & Thomas, R. (2009). Likelihood ratios: Clinical application in day-to-day practice. *Indian Journal of Ophthalmology, 57*, 217-221.
- Peng, E., Yeh, C., Lyu, S., Mirksy, D., Chen, A., Lee, M., Farabee, D., & Malow, R. (2010). Prevalence and correlates of lifetime suicidal ideation among HIV-

- infected male inmates in Taiwan. *Aids Care: Psychological and Socio-medical aspects of AIDS/HIV*, 22, 10.
- Perr, I. (1985). Suicide litigation and risk management. *Bulletin of the American Academy of Psychiatry and Law*, 13, 209-219.
- Piccolo, R., Yang, M., Bliwise, D., Yaggi, H., & Araujo, A. (2013). Racial and socioeconomic disparities in sleep and chronic disease: Results of a longitudinal investigation. *Ethnic Disparities*, 24, 499-507.
- Pompili, M., Lester, D., Innamorati, M., Del Casale, A., Girardi, P., Ferracuti, S., & Tatarelli, R. (2009). Preventing suicide in jails and prisons: Suggestions from experience with psychiatric inpatients. *Journal of Forensic Sciences*, 54, 1155–1162. doi:10.1111/j.1556-4029.2009.01122.x
- Quinlan-Davidson, M., Sanhueza, A., Espinosa, I., Escamilla-Cejudo, J., & Maddaleno, M. (2014). Suicide among young people in the Americas. *Journal of Adolescent Health*, 54, 262-268.
- Rockett, I., Wang, S., Stack, S., Leo, D., Frost, J., Ducatman, A., Walker, R., & Kapusta, N. (2010). *Biomed Central Psychiatry*, 10, 1-8.
- Roose, S., Glassman, A., Walsh, B., Woodring, S., & Vital-Herne, J. (1983). Depression, delusions, and suicide. *American Journal of Psychiatry*, 140, 1159-1162.
- Ruopp, M., Perkins, N., Whitcomb, B., & Schisterman, E. (2008). Youden's Index and optimal cut-point estimated from observations affected by a lower limit of detection. *Journal of Biomedicine*, 50, 419-430.
- Saarinen, P., Lehtonen, J., & Lonnqvist, J. (1999). Suicide risk in schizophrenia: An analysis of 18 consecutive suicides. *Schizophrenia Bulletin*, 25, 533-542.

- Salive, M., Smith, G., & Brewer, T. (1989). Suicide mortality in the Maryland state prison system, 1979 through 1987. *Journal of the American Medical Association*, *262*, 365-369. doi:10.1001/jama.1989.03430030053033
- Selby, E., Anestis, M., & Joiner, T. (2007). Daydreaming about death: Violent daydreaming as a form of emotional dysregulation in suicidality. *Behavior Modification*, *31*, 867-879. doi:10.1177/0145445507300874
- Shah, A. (2007). The relationship between suicide rate and age: An analysis of multinational data from the World Health Organization. *International Journal of Psychogeriatrics*, *16*, 1141-1152.
- Shorkey, C., & Whiteman, V. (1977). Development of the rational behavior inventory: Initial validity and reliability. *Educational and Psychological Measurement*, *37*, 527-534.
- Silverman, M. M., Berman, A. L., Sanddal, N. D., O'Carroll, P., & Joiner, T. E. Jr. (2007). Rebuilding the tower of Babel: A revised nomenclature for the study of suicide and suicidal behaviors. *Suicide and Life-Threatening Behavior*, *37*, 248-277. doi:10.1521 /suli.2007.37.3.264
- Simlot, R., McFarland, K., & Lester, D. (2013). Testing Joiner's Theory of Suicide in jail inmates: An exploratory study. *Psychological Reports: Sociocultural Issues in Psychology*, *112*, 100-105
- Solomon, R. (1980). The opponent-process theory of acquired motivation. *The American Psychologist*, *35*, 691-712.
- Sonis, J. (1999). How to use and interpret interval likelihood ratios. *Family Medicine*, *31*, 432-437.

- Tabachnick, B., & Fidell, L. (2001). *Using Multivariate Statistics*. Boston, MA: Allyn and Bacon.
- Tartaro, C., & Lester, D. (2005). An application of Durkheim's theory of suicide to prison suicide rates in the United States. *Death Studies, 29*, 413–22.  
doi:10.1080/07481180590932526
- Torrey, E., Kennard, A., Eslinger, D., & Lamb, R. (2010). More mentally ill persons are in jails and prisons than hospitals: A survey of the states. *Treatment Advocacy Center*. <http://www.sheriffs.org/userfiles/file/FinalJailsvHospitalsStudy.pdf>, Retrieved May 2014
- Tripodi, S. J., & Bender, K. (2006). Inmate suicide: Prevalence, assessment, and protocols. *Brief Treatment and Crisis Intervention, 7*, 40. doi:10.1093/brief-treatment/mhl016
- U.S. Department of Justice. (2005). *Bureau of Justice statistics special report: Suicide and homicide in state prisons and local jails*. Washington, DC: U.S. Department of Justice, NCJ 210036.
- Van Orden, K. A., Cukrowicz, K. C., Witte, T. K., Braithwaite, S. R., Selby, E. A., & Joiner, T. E. (2010). The Interpersonal Theory of suicide. *Psychological Review, 117*(2), 575–600. doi:10.1037/a0018697
- Van Orden, K., Cukrowicz, K. C., Witte, T. K., & Joiner, T. E. (2012). Thwarted belongingness and perceived burdensomeness: Construct validity and psychometric properties of the Interpersonal Needs Questionnaire. *Psychological Assessment, 24*(1), 197–215. doi:10.1037/a0025358

- Van Orden, K. A., Lynam, M. E., Hollar, D., & Joiner, T. E., Jr. (2006). Perceived burdensomeness as an indicator of suicidal symptoms. *Cognitive Therapy and Research, 30*, 457–467. doi:10.1007/s10608-006-9057-2
- Van Orden, K. A., Witte, T. K., Gordon, K. H., Bender, T. W., & Joiner, T. E. (2008). Suicidal desire and the capability for suicide: Tests of the interpersonal-psychological theory of suicidal behavior among adults. *Journal of Consulting and Clinical Psychology, 76*(1), 72–83. doi:10.1037/0022-006X.76.1.72
- Way, B. B., Miraglia, R., Sawyer, D., Beer, R., & Eddy, J. (2005). Factors related to suicide in New York state prisons. *International Journal of Law and Psychiatry, 28*, 3, 207–21. doi:10.1016/j.ijlp.2004.09.003
- Way, B. B., Kaufman, A., Knoll, J., & Chlebowski, S. (2013). Suicidal ideation among inmate-patients in state prison: Prevalence, reluctance to report, and treatment preferences. *Behavioral Sciences and the Law, 31*, 230-238.
- Wood, J., Alleyne, E., Mozova, K., & James, M. (2013). Predicting involvement in prison gang activity: Gang membership, social, and psychological factors. *Law and Human Behavior, 1*, 1-10. doi: 10.1037/lhb0000053
- World Health Organization. (2009). *Preventing suicide: A resources for police, firefighters and other first line responders*. Retrieved May 2013, [http://whqlibdoc.who.int/publications/2009/9789241598439\\_eng.pdf](http://whqlibdoc.who.int/publications/2009/9789241598439_eng.pdf)