SUICIDAL IDEATION IN A U.S. JAIL: DEMOGRAPHIC AND PSYCHIATRIC
CORRELATES AND A TEST OF BAUMEISTER'S ESCAPE THEORY

by

Karen E. Schaefer
A Dissertation
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Baumeister's Escape Theory

A Dissertation submitted in partial fulfillment of the requirements for the degree of
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Master of Arts
George Mason University, 2011

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ABSTRACT

SUICIDAL IDEATION IN A U.S. JAIL: DEMOGRAPHIC AND PSYCHIATRIC CORRELATES AND A TEST OF BAUMEISTER'S ESCAPE THEORY

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George Mason University, 2014

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The purpose of this dissertation project was to examine socio-demographic and psychiatric correlates of suicidal ideation (SI) upon incarceration, and predictors of the development/maintenance of SI in a U.S. jail sample. First, given that only one paper has examined the rate of SI in a jail sample (and only with males), the first study examined the prevalence of SI in a U.S. jail sample that includes both sexes. Additionally, it examined socio-demographic and psychiatric risk factors (psychiatric diagnosis and suicide attempt history) found to be associated with SI in prison and community populations, but not yet examined in jail samples. Participants were 511 jail inmates (68% male, 43% Black , 36% White, 10% Latino, 3% Asian, 4% "Mixed," 4% "Other", range 18-72, $M = 32.19$ years, $SD = 10.05$) serving greater than a 4-month term or being held on a felony charge at a suburban jail. SI was assessed using the suicidality scale of the Personality Assessment Inventory. Socio-demographic variables were assessed via

participant self-report. Psychiatric history was assessed using the Hare Psychopathy Checklist: Screening Version. Approximately 16% of participants reported clinically significant SI upon incarceration. Participants who were White (vs. Black), reported a prior psychiatric diagnosis, and/or endorsed a suicide attempt history reported greater SI. Degree of SI did not differ by sex or age. Overall, results indicate that: 1) rates of clinically significant SI in U.S. jails are lower than that found in prison samples; and 2) White inmates and those with a significant psychiatric history (psychiatric diagnosis and/or suicide attempt) may be more likely to report SI upon incarceration in a U.S. jail. Given that SI is one the strongest predictors of future suicide attempts, thorough mental health screenings upon incarceration may help to identify inmates at risk for suicidal behavior during incarceration.

The purpose of the second study was to test Baumeister's escape theory of suicide as it applies to the development and/or maintenance of SI over the course of incarceration in a U.S. jail sample. According to this theory, suicide is motivated by an attempt to escape from negative self-awareness caused by stressors or setbacks that are attributed to oneself. Baumeister posits that suicidal individuals progress through six stages following negative life stress, which increasingly heighten a wish for permanent escape or death. These stages include shame and/or guilt, low self-esteem, anxiety and/or depression, hopelessness, disinhibition, and SI. This second study tests this theory in a sample of inmates recently exposed to the stress of arrest and incarceration, and also examines whether results vary by socio-demographics or psychiatric history. Participants were the same jail inmates described in the first study. All participants completed the well-

validated Personality Assessment Inventory, Test of Self-Conscious Affect-Socially Deviant, Rosenberg Self-Esteem Scale, Values in Action scales, and the suicidality subscale of the Personality Assessment Inventory at the baseline assessment, which occurred shortly after incarceration. Two hundred thirty-one participants also completed the measure of SI again at pre-release/transfer (on average seven months after baseline assessment). Results indicated that each of the stages (or clinical risk factors) included in the escape theory of suicide, with the exception of guilt, were significantly correlated with SI over the course of incarceration. However, they did not fully mediate one another, as proposed in the escape model of suicide, resulting in poor model fit.

An exploratory model developed from theory, prior research, and model fit indices was then developed and tested. Guilt was removed from this model and nine paths were added (stress to depression, anxiety, and self-esteem; shame to depression, anxiety and hope; self-esteem to hope; and anxiety and depression to SI). This model provided excellent fit for the data. All pathways were significant except anxiety to hope and to SI, and from hope to SI. Notably, this exploratory model fit equally well across presence (versus absence) of a suicide attempt history. However, the model varied across sex, race, age, and psychiatric treatment history. Specifically, the paths from stress to shame, self-esteem to hope, depression to SI, and anxiety to SI were significantly different between males and females. For white inmates, low self-esteem was associated with less hope than for black inmates. Additionally, hope trended toward significance in predicting less SI in white inmates, but the relationship was insignificant for black inmates. Finally, anxiety significantly predicted more SI among black, but not white, inmates. Age also

moderated four of the pathways in the exploratory model. For younger inmates (e.g., < 31 years old), shame was associated with lower self-esteem than among older (e.g., ≥ 31 years old) inmates. Also notable is that depression predicted less hope and more SI, while anxiety predicted more hope, among younger inmates only. These relationships were not significant in older inmates. Finally, the model functioned differently for those with vs. without a history of psychiatric treatment. Specifically, stress was associated with more shame and anxiety in those with a history of psychiatric treatment, but was not related to shame and anxiety in inmates without a psychiatric treatment history. Low self-esteem was also associated with more depression in those with a history of psychiatric treatment history than those without this history. Taken together, results provide little support for the sequence of clinical risk factors posited by Baumeister's (1990) escape theory of suicide. However, they are consistent with prior research that supports an association between the clinical risk factors under investigation and SI, as well as other leading theories of suicide (e.g., cognitive theory, psychache) that incorporate many of these clinical risk factors.

Overall, results of both studies suggest that early screening for SI and clinical risk factors in jail samples is indicated. Those who are White and endorse a psychiatric diagnosis or attempt history may be most likely to report SI upon incarceration. Further, those who report heightened stress, shame (but not guilt), low self-esteem, depression, anxiety, and low hope may be at risk for developing and/or maintaining SI over the course of incarceration. Early assessment of these risk factors and clinical intervention as needed could help prevent future suicidal thoughts and behaviors in this population.

INTRODUCTION

Suicide is the second leading cause of death in U.S. jails (Metzner, 2002), with rates three times higher than in prisons (Mumola, 2005). Over 400 jail inmates kill themselves each year (Hayes, 2005), and there are approximately 80 suicide attempts for every suicide completion (Goss et al., 2002). Suicidal ideation (SI), a common precursor to suicide attempts and completions, is also prevalent among prison inmates. In the general population, SI is one of the strongest predictors of suicidal behavior, as it precedes most suicide attempts and predicts both attempts and completions (Kachur et al., 1995; Lewinsohn et al., 1996; Beck et al., 1999; Brown et al., 2000; Borges et al., 2008). SI has been found to be strongly associated with completed suicide and past suicide attempts in prisoners (Fazel, Cartwright, Norman-Nott, & Hawton, 2008; Ivanoff, Jang, & Smyth, 1996). Seventy-two percent of prison suicide victims report SI to staff before their deaths (He et al., 2001) and 29% of male jail inmates report high-intent SI during incarceration (Bonner & Rich, 1990). Additionally, in a study conducted with a Chinese prison sample, 70% reported SI in the last week (Zhang, Grabiner, Zhou, & Li, 2010). As is evident, suicidal thoughts and behaviors represent a significant public health problem in U.S. jails and prisons.

Though many correctional institutions have taken steps to prevent suicide, implementing suicide screening and prevention programs, research suggests that these

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efforts have not been met with great success. Indeed, results of a psychological autopsy study conducted on 464 jail inmates who committed suicide in the U.S. from 2005-2006, revealed that 47% of victims were assessed by a clinician within three days of their death (Hayes, 2010). The relatively high prevalence of suicidal behavior and ideation in incarcerated populations, in combination with failed attempts at suicide risk assessment and prevention, suggest that a more thorough understanding of risk factors for suicide in U.S. jails is sorely needed.

Given the association between SI and suicidal behavior, research that examines rates of SI and its correlates in jail populations holds great importance for identifying those most at risk for suicidal behavior upon incarceration. Though not studied in relation to SI, the associations between socio-demographic variables and suicidal behavior in jails have been examined. White inmates commit suicide at higher rates than black or Hispanic inmates in U.S. jails (Hayes, 1989; Charles, 2003; Mumola, 2005; Mumola & Noonan, 2008), with rates three to six times higher among whites (Mumola, 2005). Most recently, Hayes (2010) found that 67% of jail suicide victims were white, 15.1% were black, and 12.7% Hispanic. Suicide victims in U.S. jails are disproportionately males (93%) (Hayes, 2010), but women attempt at higher rates than males (Goss et al., 2002; Charles et al., 2003). The average age of suicide victims in U.S. jails is in the 30s (Kennedy, 1984; Hayes, 1989; Goss et al., 2002; Mumola & Noonan, 2008), which mirrors the general jail population.

Another important correlate of suicide in incarcerated populations is mental health history, including psychiatric disorders and prior suicide attempts. Hayes (2010) found

that 38.1% of jail suicide victims reported a history of mental illness at intake, compared with 64% of the general jail population and 90% of suicide victims in the community. Goss et al. (2002) found that 77% of inmates who made a suicide attempt reported a history of a chronic psychiatric problem, compared with 15% of the general jail population. Though not yet examined in a U.S. jail sample, studies also show a relationship between psychiatric disorders and SI in prison samples (Ivanoff et al., 1996; Lekka et al., 2006; Sarchiapone et al., 2009). Also notable is that a suicide attempt history has been reported among 34% of those who complete (Hayes, 2010) and 41% of those who attempt suicide in U.S. jails (Goss et al., 2002). Jail inmates with a history of a suicide attempt may be more likely to think about suicide than those without this history. Cumulatively, research indicates that white race, young adulthood (30s), psychiatric diagnoses, and previous suicide attempts are associated with suicidal behavior in jails. Moreover, females attempt but do not complete suicide at higher rates than males.

Most research on suicidal thoughts and behavior in incarcerated populations to date has focused on demographic correlates. Few studies have examined clinical correlates/predictors of suicidal thoughts and behaviors or integrated leading theories of suicide into research. Although they are amenable to therapeutic intervention and may hold potential to improve the prediction of suicide, only eight studies have been conducted to test them empirically with incarcerated populations. Across these eight studies, twelve clinical factors have been found to be associated with suicidal thoughts and behavior, some of which received mixed support. These include guilt, anxiety, fear,

depression, hopelessness, aggression, impulsivity, and psychache, as well as low resilience, reasons for living, social support, and self-esteem.

Four of these studies examined clinical risk factors for current SI among inmates. Three out of four studies found that depression was associated with current SI (Ivanoff et al., 1996; Lekka et al., 2006; Zhang et al., 2010). Two out of three studies indicated that hopelessness was associated with current SI (Ivanoff et al., 1996; Lekka et al., 2006). However, results of one study indicated that psychache predicted current SI above and beyond depression and hopelessness (Pereira et al., 2010). Low reasons for living (Ivanoff et al., 1996) anxiety (Lekka et al., 2006), guilt (Lekka et al., 2006), low social support (Zhang et al., 2010), and low self-esteem (Zhang et al., 2010) also received support as clinical risk factors for current SI in a single study. Additionally, impulsivity was associated with a history of SI in only one (Sarchiapone et al., 2009) out of two (Carli et al., 2010) studies. Though these studies provide important preliminary data for the association between clinical risk factors and suicidality in incarcerated samples, they are subject to multiple methodological limitations (e.g., including use of retrospective chart review, retrospective reports of suicide attempts, lack of assessment for suicidal intent, predominant use of cross-sectional research designs, use of non-empirically validated assessment instruments, lack of attention to theory, and lack of consideration of other well-validated risk factors (e.g., history of mental illness and suicide attempts)). Also of concern is the lack of attention to issues of diversity in this literature, including setting (prison versus jails), gender, race, and age, which limit conclusions that can be drawn.

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The purpose of the series of studies that comprise this dissertation was to answer two questions. First, given that only one paper has examined the rate of SI in a jail sample (and only with males), the first study establishes the prevalence in a U.S. jail sample that includes both genders. Additionally, it examines demographic and psychiatric correlates of suicidal ideation (e.g., sex, age, race, history of psychiatric treatment, history of suicide attempt). Though these relationships have been studied in prison and community populations, they have not yet been examined in jail samples in relation to SI.

The second study tests an evidence-based theoretical model of SI to establish whether clinical risk factors included in Baumeister's escape theory of suicide predict the development and/or maintenance of SI throughout incarceration. Additionally, consistent with the goal of the first paper, this second paper explores whether results vary by socio-demographic factors and mental health history (race, age, sex, and psychiatric/suicide attempt history). It was hypothesized that negative life stress would be significantly related to shame and guilt, shame and guilt would be related to self-esteem, self-esteem would be related to depression and anxiety, anxiety and depression would be related to hopelessness, and hopelessness would be related to SI during incarceration. It was hypothesized that each stage (aside from the first and last) would mediate the relationship between the prior and subsequent stage. Examination of group differences related to sex (male vs. female), race (white vs. black), age (<30 vs. ≥30), and presence vs. absence of a psychiatric history (treatment or suicide attempts) was exploratory given that differences in demographic and psychiatric history have not been tested in relation to Baumeister's

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(1990) model with incarcerated populations, though they could have a significant effect on study findings.

Results of the first study indicated that approximately 16% of inmates reported clinically significant SI upon incarceration. Participants who reported white race and a history of a suicide attempt endorsed significantly higher SI compared with black participants and those without such histories. Findings are consistent with prior research indicating that jail inmates reporting white (vs. black) race and suicide attempt histories (vs. none) are more likely to engage in suicidal behavior (Hayes, 2010). Results suggest that these findings may extend to SI among U.S. jail inmates. This study also found that jail inmates who reported a history of psychiatric disorders (vs. none) were more likely to report SI. This finding is inconsistent with prior research which found that jail suicide victims were *less* likely to report such histories (Hayes, 2010), but consistent with community research. Age was also not correlated with SI. Results suggest that the age and sex of jail inmates may not help determine who is most likely to think about suicide. Overall, these results support the importance of a thorough mental health screening for jail inmates upon incarceration, which prior research suggests has been grossly inadequate in jails with completed suicides.

Results of the second study did not provide the hypothesized support for Baumeister's escape theory of SI in a jail sample. Study findings indicated that each of the stages included in the escape theory of suicide (with the exception of guilt) were significantly correlated with SI over the course of incarceration. However, the originally proposed escape model, which included full mediation of variables prior and subsequent

to each stage, resulted in poor model fit. Although fit improved significantly when the error terms between shame and guilt, and between depression and anxiety were added, model fit was still not acceptable. These study results indicate that the "stages" leading to SI and behavior proposed by Baumeister may not fully mediate each other. This study also examined an exploratory model developed from theory, prior research, and model fit indices. In this model, guilt was removed and nine paths were added (stress to depression, anxiety, and self-esteem; shame to depression, anxiety and hope; self-esteem to hope; and anxiety and depression to SI). This model provided excellent fit for the data. The first six "stages" were significantly related to each other (e.g., stress, shame, self-esteem, depression, anxiety, and hope). However, anxiety and hope did not predict SI over the course of incarceration. Only the paths from stress to depression to SI remained significant.

Interestingly, results also suggested some differences in model fit across socio-demographics (sex, race, age) and psychiatric treatment history. Results indicated that the proposed model functioned differently in male and female jail inmates. For female inmates, stress was associated with more shame than in male inmates. Findings also indicate that low self-esteem was associated with lower hope among female relative to male inmates. Interestingly, anxiety predicted SI among female inmates (but not males), while depression predicted SI among male inmates (but not females). Thus, anxiety related to the stress of incarceration may be a more important risk factor for SI in female jail inmates, while depressive responses are more important in male jail inmates.

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Results also indicated that the exploratory model functioned differently for white vs. black participants with regard to three pathways. For white inmates, low self-esteem was associated with less hope than for black inmates. Additionally, hope trended toward significance in predicting less SI in white inmates, but the relationship was insignificant for black inmates. Finally, anxiety significantly predicted more SI among black, but not white, inmates. Results of the present study suggest that black jail inmates who experience anxiety in response to the stress of incarceration may be more prone to think about suicide.

Age also moderated four of the pathways in the exploratory model. For younger inmates (e.g., < 31 years old), shame was associated with lower self-esteem than among older (e.g., ≥ 31 years old) inmates. Also notable is that depression predicted less hope and more SI, while anxiety predicted more hope, among younger inmates only. These relationships were not significant in older inmates. Results related to depression, low hope, and SI among younger inmates are consistent with a large body of theoretical and empirical research (e.g., Beck et al., 1985; Beck et al., 1993; Beck et al., 1999). Results of the present study suggest that this pattern is relevant for younger, but not necessarily older, jail inmates.

Also notable is that the model functioned differently for those with vs. without a history of psychiatric treatment. Specifically, stress was associated with more shame and anxiety in those with a history of psychiatric treatment, but was not related to shame and anxiety in inmates without a psychiatric treatment history. Low self-esteem was also associated with more depression in those with a history of psychiatric treatment history

than those without this history. Findings may indicate that a history of clinical symptoms warranting treatment among adults sent to jail, potentially reflective of a heightened genetic loading for psychiatric disorders, may increase the likelihood that these symptoms will emerge under conditions of high stress, such as incarceration. However, none of the paths leading to SI were significant for those with a history of psychiatric treatment. Results may indicate that coping skills learned in past treatment may decrease the likelihood of suicidal thinking in response to psychiatric distress during the incarceration period. Among inmates with no history of psychiatric treatment, stress and depression predicted SI.

With regard to group differences across suicide attempt history, no significant differences were found. Results suggest that the exploratory model fits equally well across these groups. However, it is important to note that the number of participants with a history of a suicide attempt ($N = 53$) was quite small, thus there may not have been sufficient power to detect differences between suicide attempters and non-attempters.

In conclusion, the present studies contribute to the literature in multiple ways. The results of the first study contribute to the small literature on SI in jail samples, and help establish the prevalence of SI. This is particularly important given that SI is an acute risk factor for suicidal behavior in this population. Additionally, findings suggest that established risk factors for suicidal behavior in incarcerated populations extend to SI.

Results of the second study add to the small theoretically based literature on suicide in jails. Taken together, results provide little support for the sequence of clinical risk factors posited by Baumeister's (1990) escape theory of suicide. In fact, the

originally proposed model with full mediation of stages provided poor fit to the data,

suggesting that clinical risk factors do not progress in "stages" leading to SI. Although

the exploratory model provided excellent fit to the data, only the pathways from stress to

depression were significant in the overall sample, as well as for inmates who were male,

white, younger, or had no psychiatric treatment history. Only the paths from stress to

anxiety predicted more SI for female, black, and older inmates. For inmates with a

history of psychiatric treatment, none of the paths leading to SI were significant. While

results do not support Baumeister's "stage" model of suicide, they are consistent with

prior research that supports an association between the clinical risk factors under

investigation and SI, as well as other leading theories of suicide (e.g., cognitive theory,

psychache) that incorporate many of these clinical risk factors.

Clinically, results suggest that screening for SI in jail samples is indicated to

identify high-risk individuals and direct them to needed care to prevent suicidal behavior.

Those who are white and endorse a psychiatric diagnosis or attempt history may be at

greatest risk for SI during incarceration. Findings also indicate that clinical risk factors

for SI included in Baumeister's escape theory of suicide (though not his mediational

model) are important to consider in a U.S. jail sample. Specifically, stress, shame (but not

guilt), low self-esteem, depression, anxiety, and low hope are related to SI during

incarceration in this sample. Further, inmates who experience high levels of these risk

factors may be at particularly high risk for experiencing SI over the course of

incarceration. Thus, early screening and continued monitoring for these clinical risk

factors could help to identify inmates at risk for SI and triage them to appropriate mental

health care. Empirically-supported interventions such as cognitive-behavioral therapy, which employs problem solving, cognitive restructuring, and affect regulation techniques to remediate negative appraisals and behaviors associated with a range of psychological symptoms (e.g., depression, anxiety, SI) may be particularly helpful for inmates. Early assessment and intervention could help prevent future suicidal thoughts and behaviors in U.S. jail inmates.

Although results of the present studies provide important information about the prevalence, demographic, psychiatric, and clinical correlates of SI upon and during incarceration, several limitations must be considered. First, the measure of SI used did not contain much detail about the nature of these thoughts. Future research should employ measures of suicidal thoughts and behaviors that capture frequency, intensity, and purpose of these thoughts and behaviors, in order to better understand these relationships. Additionally, administration of such measures of SI at multiple time points could provide a better understanding of the course of SI throughout incarceration, as well as any fluctuations. Second, the measure of hope used was not a standard measure of hopelessness. Future studies should employ gold standard measures (e.g., Beck Hopelessness Scale). Third, although the sample was diverse in terms of sex, race, and age, there may not have been sufficient diversity in suicide attempt history to detect group differences in risk factors for SI. Future studies should examine these differences in sufficient sample sizes. Fourth, the final exploratory model had only four degrees of freedom. Most models that are this close to being fully saturated fit the data adequately. Finally, the clinical risk factors for SI examined in the model were all measured at one

time point. Thus, the "stage" or sequential component of Baumeister's escape theory of suicide could not be adequately tested. Although the current study did look at SI longitudinally, future research may wish to examine this model using clinical risk factors in a longitudinal design as well. Continued theory building and testing is needed to improve our knowledge and understanding of SI in jail populations.

SUICIDAL IDEATION IN A U.S. JAIL: DEMOGRAPHIC AND PSYCHIATRIC CORRELATES

Suicide is the second leading cause of death in U.S. jails (Metzner, 2002), with rates three times higher than in prisons (Mumola, 2005). Over 400 jail inmates kill themselves each year (Hayes, 2005), and there are approximately 80 suicide attempts for every suicide completion (Goss et al., 2002). Suicidal ideation (SI) is a predictor of suicidal behavior in jails and prisons (Fruehwald et al., 2004; Hayes, 2010; Fazel et al., 2008). Seventy-two percent of prison suicide victims report SI to staff before their deaths (He et al., 2001) and 29% of male jail inmates report high-intent SI during incarceration (Bonner & Rich, 1990). Given the association between SI and suicidal behavior, research that examines rates of SI and its correlates in jail populations holds great importance for identifying those at risk for suicidal behavior upon incarceration. Yet, little research has been conducted in this area. The purpose of the present study is to address this gap by documenting rates of SI in a jail sample and examining socio-demographic (race, gender, age) and psychiatric correlates (psychiatric diagnosis, suicide attempt).

Though not studied in relation to SI, the associations between socio-demographic variables and suicidal behavior in jails have been examined. White inmates commit suicide at higher rates than black or Hispanic inmates in U.S. jails (Hayes, 1989; Charles, 2003; Mumola, 2005; Mumola & Noonan, 2008), with rates three to six times higher among whites (Mumola, 2005). Most recently, Hayes (2010) found that 67% of jail

suicide victims were white, 15.1% were black, and 12.7% Hispanic. Suicide victims in U.S. jails are disproportionately males (93%) (Hayes, 2010), but women attempt at higher rates than males (Goss et al., 2002; Charles et al., 2003). The average age of suicide victims in U.S. jails is in the 30s (Kennedy, 1984; Hayes, 1989; Goss et al., 2002; Mumola & Noonan, 2008), which mirrors the general jail population.

With regard to mental health history, Hayes (2010) found that 38.1% of jail suicide victims reported a history of mental illness at intake, compared with 64% of the general jail population and 90% of suicide victims in the community. The author concludes that intake screenings of mental health history in facilities where suicides occur are inadequate. Goss et al. (2002) found that 77% of jail inmates who made a suicide attempt reported a history of a chronic psychiatric problem, compared with 15% of the general jail population. Taken together, results suggest that psychiatric disorders are associated with suicidal behavior in jails. Though not yet examined in a U.S. jail sample, studies also show a relationship between psychiatric disorders and SI in prison samples (Ivanoff et al., 1996; Lekka et al., 2006; Sarchiapone et al., 2009).

Cumulatively, research indicates that white race, young adulthood (30s), and psychiatric diagnoses are associated with suicidal behavior in jails. Moreover, females attempt but do not complete suicide at higher rates than males. The present study will explore rates of SI in a U.S. jail sample and whether these correlates of suicidal behavior are similarly associated with SI.

Methods

Participants

  Inmates (*N*=511) at a suburban jail participated in this study as part of a larger

project (Tangney et al., 2007). Inclusion criteria included: 1) greater than 4-month term

or being held on at least one felony charge with no bond/bond greater than $7000; 2)

assignment to medium- or maximum-security general population; and 3) proficiency in

English or Spanish. Participants were dropped if Infrequency and Inconsistency scales on

the Personality Assessment Inventory exceeded recommended cutoffs (74*t* and 72*t*,

respectively) and the other was elevated (69*t*) (Morey, 1991). The sample was 68% male,

and diverse in terms of race/ethnicity (43% African-American, 36% Caucasian, 10%

Latino, 3% Asian, 4% "Mixed," 4% "Other"), and age (*M* = 32.19 years, *SD* = 10.05, 18-

72).

Materials

  Socio-Demographic variables were assessed during the initial interview by

participants' self-reported race, gender, and age. Psychiatric history was assessed during

the clinical interview conducted to score the Hare Psychopathy Checklist: Screening

Version (Hart et al., 1995). Suicidal ideation (e.g., impulses and plans to commit suicide,

thoughts about death) was measured with the 12-item suicidality scale from the

Personality Assessment Inventory (Morey, 1991). Clinical scores (*T* >59) are related to

risk for suicidal behavior and have been correlated with suicide precaution status in

clinical samples (Morey, 1991).

Procedures

Eligible participants were approached for participation several days into incarceration and informed that participation would not affect jail status or release date. Interviews were conducted in private visiting rooms. A Certificate of Confidentiality was obtained from the Department of Health and Human Services to protect data. Those who provided informed consent and completed a baseline assessment received $15-$18. This study received approval from the GMU Human Subjects Review Board.

Results

Intercorrelations of study variables are shown in Table 1. Approximately 16% of participants reported clinically significant SI ($T > 59$) (M=50.92, SD=11.01). Results of independent samples t-tests revealed that white vs. black participants $t(409)$= -3.37, $p<$ .01, suicide attempters vs. non-attempters $t(446)$= -9.76, $p<$.001, and those with vs. without a psychiatric diagnosis history $t(317)$= -3.89, $p<$.001 endorsed greater SI. SI did not differ by sex $t(509)$= -.04, p=.97. Age was not significantly correlated with SI.

Table 1. Intercorrelations, means, and standard deviations

Variable	1	2	3	4	5	6
1. SI	-	-.04	.00	.13**	.21**	.42**
2. Age		-	-.14**	-.02	.19**	.05
3. Gender (f=1, m=2)			-	-.06	-.05	-.14**
4. Race (black=1, white=2)				-	.25**	.13**
5. Psychiatric Diagnosis					-	.37**
6. History of Suicide Attempt (absent=0)						-

Discussion

This study examined the prevalence of SI in a U.S. jail sample and potential differences in SI related to race, gender, age, and psychiatric history. Approximately 16% of inmates reported clinically significant SI upon incarceration. These results represent the first effort to establish rates of SI among a mixed gender U.S. jail sample. Notably, this rate is lower than that reported in a prior study (29%) that examined SI among male inmates at various points in the incarceration period (Bonner & Rich, 1990). However, the present study included both sexes and only examined SI upon incarceration. Additionally, the measure used to assess SI in the prior study (Beck Scale for Suicidal Ideation) may have been relatively more sensitive than the PAI.

Participants who reported white race and a history of psychiatric diagnosis or suicide attempt endorsed significantly higher SI compared with black participants and those without such histories. Findings are consistent with prior research indicating that inmates reporting white (vs. black) race and suicide attempt histories (vs. none) are more likely to engage in suicidal behavior (Hayes, 1989, 2010; Goss et al., 2002; Mumola, 2005; Mumola & Noonan, 2008). Results suggest that these risk factors for suicidal behavior may extend to SI among U.S. jail inmates. Interestingly, study findings are inconsistent with past research suggesting that jail suicide victims were *less* likely to report histories of psychiatric diagnoses (Hayes, 2010), but consistent with community research. Past research relying on chart reviews may result in missing data on mental health histories for inmates who wish to avoid disclosing current SI. Alternatively, inmates with no access to mental healthcare may unknowingly experience undiagnosed psychiatric disorders. Study results suggest that thorough screening for mental health

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history may help clarify which jail inmates are more likely to think about suicide. Sex and age differences in SI were not found in the present study, consistent with one study that also failed to find sex differences (Zhang et al., 2010). In short, jail inmates' rates of suicidal thoughts are similar for men and women and for inmates of all ages.

Clinically, results suggest that screening for SI in jail samples is indicated to identify high-risk individuals and direct them to needed care to prevent suicidal behavior. Those who are white and endorse a psychiatric diagnosis or attempt history may be at greatest risk for SI during incarceration. However, given the cross-sectional nature of the study and single measure of SI severity, future research should employ longitudinal designs that capture fluctuations in frequency, intensity, and intent of SI. It will also be important to examine clinical risk factors (e.g., depression, shame/guilt) that are amenable to change.

A TEST OF BAUMEISTER'S ESCAPE THEORY OF SUICIDE IN AN INCARCERATED SAMPLE

Suicide is the second leading cause of death in U.S. jails (Metzner, 2002). Over 400 inmates kill themselves each year (Hayes, 2005). Suicide rates are estimated to be approximately nine times higher in U.S. jails than in the general population (Daniel, 2006) and nearly three times higher than in U.S. prisons (Mumola, 2005). Moreover, suicide attempts in jails outnumber suicide completions by 80 to one (Goss, Peterson, Smith, Kalb, & Brodey, 2002). Suicidal ideation (SI), a common precursor to suicide attempts and completions, is also prevalent in incarcerated populations (Fazel, Cartwright, Norman-Nott, & Hawton, 2008). Rates of SI are as high as 72% among prison suicide victims and 29% in male jail inmates (He, Felthouse, Holzer, Nathan, & Veasey, 2001; Bonner & Rich, 1990). However, no studies to date have incorporated leading theories of suicide to explain the development and/or maintenance of SI among U.S. jail inmates during the course of incarceration.

A review of leading theories of suicide indicates that motivational (e.g., Durkheim, 1897), cognitive (e.g. Beck et al., 1985), psychological (e.g., Schneidman, 1993), and interpersonal (e.g., Joiner, 2005) explanations have dominated the field for the last century. Baumeister's (1990) escape theory of suicide integrates and builds upon these theories and may help to explain the development of SI in an incarcerated population. According to Baumeister, suicide is motivated by an attempt to escape from

negative self-awareness caused by setbacks or disappointments that are attributed to oneself. Baumeister posits that suicidal individuals progress through six stages following negative life stress, which increasingly heighten a wish for permanent escape or death. These stages include shame and/or guilt, low self-esteem, anxiety and/or depression, hopelessness, disinhibition, and SI. When applied to inmates, incarceration and/or the events leading up to it represent *negative life stress* that may trigger a desire to escape from negative self-awareness. Short-term incarceration in jails is particularly stressful because it represents a crisis for most inmates, who must cope with their arrest and adjust to confinement and uncertainty about the legal process and its outcomes (Bonner & Rich, 1992; Bonner, 2000). Jail conditions can also be noisy, crowded, and poorly ventilated, creating a tense and stressful environment (Winkler, 1992). Additionally, inmates are isolated from their support systems and normal coping mechanisms, which exacerbates their stress.

In the face of such stress, inmates may experience *shame* and/or *guilt*, particularly those prone to these types of emotions, in reference to their offense or the consequences of incarceration (e.g., letting friends or family members down). These emotions may then negatively affect *self-esteem*, as some inmates question their self-worth or value as human beings. For some, this self-doubt may lead to symptoms of *depression* and *anxiety*, particularly when inmates consider the difficulties of incarceration (e.g., limited freedom, little contact with family) and its consequences (e.g., financial difficulty and reduced job prospects upon release). This in turn may lead many to become hopeless about successfully completing their sentence and returning to the community.

Interactions with the criminal justice system may heighten this sense of *hopelessness*. Indeed, 50% to 80% of jail suicides occur within two to three days of a court date or appearance (Marcus, 1993; Hayes, 2010). For those who experience high levels of hopelessness, immediate, short-term goals and sensations may become more important than long-term aspirations. Inner restraints that usually protect from self-harm may weaken. Some inmates who experience this *disinhibition* (or for many, heightened disinhibition, given that offenders often have lower levels of self-control than non-offending populations (Gottfredson & Hirschi, 1990) may think about alternatives that will end their psychological pain quickly, such as suicide, rather than considering more adaptive coping techniques. According to Baumeister, these steps represent choice points in a decision tree. They occur in sequence and culminate in a suicide attempt only when each step produces the aforementioned outcomes.

Prior research provides support for many of the "steps" or clinical risk factors included in Baumeister's (1990) escape theory of suicide in incarcerated populations. Many theorize that incarceration in U.S. jails acts as a significant stressor that can exacerbate vulnerabilities for SI, such as mental illness or poor coping ability, which are overrepresented in the jail population (Bonner & Rich, 1990; Bonner, 2000; Winkler, 1992). Further, stress (Bonner & Rich, 1990), guilt (Dooley, 1990; Lekka et al., 2006), low self-esteem (Zhang et al., 2010), depression (Ivanoff et al., 1996; Lekka et al., 2006; Sarchiapone, Carli, Di Giananntonio, & Roy, 2009; Carli, Jovanovic, Podlesek, Roy, Rihmer, Maggi, Marusic, Cesaro, Marusic, & Sarchiapone, 2010; Pereira et al., 2010; Zhang et al., 2010), anxiety (Way, Miraglia, Sawyer, Beer, & Eddy, 2005; Lekka et al.,

2006), and hopelessness (Ivanoff et al., 1996; Lekka et al., 2006) have been associated with SI or behavior among prisoners. Support has been mixed for impulsivity/ disinhibition (Sarchiapone et al., 2009). Given this preliminary support for most of these individual clinical risk factors included in Baumeister's (1990) escape theory of suicide within incarcerated samples, the full model warrants investigation.

Researchers have drawn on escape theory to help explain SI in college students (Chatard & Selimbegovic, 2010; Schaefer, Esposito-Smythers, & Riskind, 2012). However, Baumeister's (1990) full escape model of suicide (with slight revision) has only been tested empirically in three studies conducted by Dean and colleagues (Dean & Range, 1996; Dean et al., 1996; Dean & Range, 1999). In the first study, college students completed self-report measures of negative life stress, perfectionism, depression, anxiety, hopelessness, reasons for living, and suicidal behavior at one time point. A path analysis provided partial validation for the model and accounted for 26% of the variance in suicidal behavior. However, the addition of a path from negative life stress to suicidal behavior was necessary to achieve adequate model fit, and only negative life stress and reasons for living were significant predictors of suicidal behavior (Dean & Range, 1996). In a second cross-sectional study with college students, Dean, Range, and Goggin (1996) revised the model further to include SI instead of suicidal behavior as their outcome. The authors also included an evidence-based measure of other-oriented perfection, in addition to the original measure of self-oriented perfectionism. All paths were significant in the revised model, which demonstrated excellent fit. Namely, the model showed significant unidirectional paths from negative life stress to other-oriented perfection, other-oriented

perfection to anxiety and depression, anxiety and depression to hopelessness, hopelessness to reasons for living, and from reasons for living to SI. Results indicate that Baumeister's causal chain of events leading to SI, as measured by Dean et al. (1996), received support in a college sample. In a third cross-sectional study, Dean and Range (1999) tested their revised model of SI (but also excluded anxiety) in a clinical sample. The authors also substituted a measure of negative life events for the measure of negative life stress used in prior studies (Dean & Range, 1996; Dean, Range, & Goggin, 1999). Significant paths were found from other-oriented perfectionism to depression, depression to hopelessness, hopelessness to reasons for living, and reasons for living to SI. Unexpectedly, negative life events did not play a significant role in the model. Even so, the model excellent fit, providing partial support for their conceptualization of Baumeister's linear model of SI. The model demonstrated good fit, providing support for this version of Baumeister's model of SI in a clinical sample. This model has not yet been tested in an incarcerated sample, a population known to have elevated rates of mental health problems.

The purpose of the present study is to enhance our understanding of SI in an incarcerated population by testing Baumeister's escape theory of suicide (Baumeister, 1990) in a diverse jail sample, with close attention to potential group differences (e.g., race, age, sex, psychiatric/suicide attempt history). Study findings could inform intervention practices when jail inmates present with SI. This study will also examine the potential differing roles of shame vs. guilt and anxiety vs. depression in this population (e.g., Tangney et al., 2011), and examine SI over the course of incarceration as the

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outcome. Further, this study will employ a short-term longitudinal design to examine whether the "stages" in Baumister's model, assessed upon incarceration, prospectively predict degree of SI at pre-release/transfer. Given that the initial stress of incarceration has been associated with elevated mental health symptoms, including suicidal thoughts and behavior (Hayes, 2010, Bonner & Rich, 1990), this study will examine whether initial clinical responses to incarceration stress captured in Baumeister's theory, predict the development and/or maintenance of SI throughout the incarceration period. All of Baumeister's "stages" will be included in the model, with the exception of disinhibition. This stage has received mixed support in the literature and was not supported in prior empirical tests of Baumeister's (1990) model (Dean & Range, 1996). Conceptually, a tendency to engage in impulsive behavior may have an impact on actual suicidal behavior, but not necessarily SI.

Theoretically informed research is necessary to provide a better understanding of how to intervene when jail inmates present with SI. A test of Baumeister's escape theory of SI in an incarcerated sample could provide useful information about clinical risk factors that may serve as points of intervention.

The following aims/hypotheses are offered:

Aims and Hypotheses:

Aim 1: Examine whether Baumeister's model of suicide explains SI during incarceration.

Hypothesis 1: Negative life stress will be significantly related to shame and guilt, shame and guilt will be related to self-esteem, self-esteem will be related to depression

and anxiety, anxiety and depression will be related to hopelessness, and hopelessness will be related to SI during incarceration. Each stage (aside from the first and last) will mediate the relationship between the prior and subsequent stage.

Aim 2: Explore potential sex (male vs. female), race (white vs. black), and age (<30 vs. ≥30) differences in this model.

Aim 3: Examine whether there are group differences in this model for participants with and without a psychiatric history (treatment or suicide attempt).

These latter two aims are exploratory given that differences in demographic and psychiatric history have not been tested in relation to Baumeister's (1990) model with incarcerated populations, though they could have a significant effect on study findings. Research suggests that mean levels of suicidal ideation may vary across these groups (Fazel et al., 2008; Hayes, 2010). Although it cannot be assumed that the mechanisms affecting SI will also vary across different demographic groups, exploration of whether clinical risk factors for SI generalize or differ according to race, age, sex, and psychiatric/suicide attempt history is warranted.

Methods

Participants

Inmates (*N*=511) at a suburban jail participated in this study as part of a larger longitudinal research project on moral emotions and criminal recidivism. Inclusion criteria included: 1) serving a term greater than 4 months or being held on at least one felony charge with no bond/bond greater than $7000; 2) assignment to medium- or maximum-security general population; and 3) proficiency in English or Spanish.

Participants were dropped ($N = 5$) if Infrequency and Inconsistency scales on the

Personality Assessment Inventory exceeded recommended cutoffs ($74T$ and $72T$,

respectively) and the other was elevated ($69T$) (Morey, 1991). The sample was 68%

male, and diverse in terms of race/ethnicity (43% African-American, 36% Caucasian,

10% Latino, 3% Asian, 4% "Mixed," 4% "Other"), and age ($M = 31$ years, $SD = 10$, 18-

72).

Procedure

Eligible participants were approached several days into incarceration, presented

with a study description, and informed that participation would not affect jail status or

release date. Interviews were conducted in professional visiting rooms to ensure

confidentiality. A Certificate of Confidentiality was obtained from the Department of

Health and Human Services to protect data. After informed consent, those who agreed to

participate and completed a baseline assessment received $15-$18. This study received

full approval from the Human Subjects Review Board.

Participants with sufficient English verbal comprehension used a touch-screen

computer to complete study questionnaires. The computer read each question aloud via

headphones to accommodate those participants with limited reading ability. Individual

interviews were conducted with participants requiring Spanish versions of the

questionnaires, in which both the interviewer and participant had copies of the translated

measures.

Participants who were enrolled in the study for at least six weeks completed

another assessment just prior to release from jail into the community or transfer to

another facility ($N = 231$). Participants received \$25 for completing this interview. In most cases, participants who were ineligible for the Time 2 interview were released less than six weeks after enrolling in the study, before they could be interviewed. Of the 415 participants who were eligible for a pre-release/pre-transfer assessment, 304 (73%) were re-interviewed. In most cases, interviews that were missed were due to insufficient notice by correctional staff that eligible participants were being released/transferred. Additionally, 68 participants (22%) were not administered the measure of psychological symptoms at Time 2 because they were interviewed greater than two weeks post-release/transfer and their report of mental health symptoms would not accurately reflect their functioning prior to release. Less often, data are missing due to concerns with validity ($N = 5$) or because the participant withdrew from the study. All variables except SI were assessed upon incarceration. Suicidal ideation was measured at pre-release/transfer, on average about 7 months later. Attrition analyses indicated that participants who had pre-release suicidality information did not differ from those who did not on any study variables.

Measures

Demographic Variables were assessed during the initial interview by participants' self-reported race, sex, and age (dichotomized using a mean split).

Psychiatric History was obtained from the Hare Psychopathy Checklist: Screening Version (Hart, Cox, & Hare, 1995). Participants described prior psychiatric and suicide attempt history.

Stressful Events, Clinical Factors, and SI were assessed using subscales from the Personality Assessment Inventory (PAI, Morey, 1991), a widely used, psychometrically sound self-report measure of psychopathology and personality traits that has been well validated in correctional samples (Edens & Ruiz, 2005). The *stress scale* consists of 8 items that assess current and recent stressors related to recent/future changes (Morey, 2003). In the present study, coefficient α = .82. The 24-item *depression scale* assesses cognitive, affective, and physiological symptoms of depression, providing an overall estimate of symptom severity. In the present study, coefficient α = .89. The 24-item *anxiety scale* parallels the depression scale and is a nonspecific indicator of tension and negative affect. In the present study, coefficient α = 0.89. The 12-item *suicidality scale* assesses for impulses and plans to commit suicide, as well as thoughts about death (Morey, 2003). High scores are related to risk for suicidal behavior and have been correlated with suicide precaution status in clinical samples (Morey, 1991). In the present study, coefficient α was 0.75.

Shame and Guilt were assessed using the 13-item Test of Self-Conscious Affect-Socially Deviant (TOSCA-SD; Hanson & Tangney, 1996), a measure of inmates' proneness to shame and guilt. Respondents are asked to imagine themselves in scenarios they might encounter in everyday life. Responses provide reactions indicative of shame or guilt specific to the context of the scenario. Respondents rate how likely they would be to respond in each way on a 5-point Likert scale. In the present study, coefficient α was 0.80 for the guilt and .71 for the shame scales.

Self-Esteem was measured using the Rosenberg Self-Esteem Scale (Rosenberg, 1965), a 10-item self-report measure of global self-esteem. It demonstrates good internal validity (Ward, 1977; Fleming & Courtney, 1984), face validity (Gray-Little, Williams, & Hancock, 1997), and concurrent and construct validity (Francis & Wilcox, 1995). In the present study, coefficient α was 0.87.

Hopelessness was assessed using a subscale from the Values in Action (VIA; Peterson & Seligman, 2001) instrument. An 84-item abbreviated version of the VIA, a 240-item measure of 24 character strengths (10 items per strength) that demonstrates adequate reliability and validity (Peterson & Seligman, 2004), was used. In the present study, coefficient α for the 10-item hope scale was 0.83.

Data Analytic Plan

First, a series of bivariate correlations was computed to examine the individual relationships among demographic variables, history of a psychiatric treatment, history of a suicide attempt, stressful life events, shame, guilt, self-esteem, depression, anxiety, hopelessness, and SI.

Next, a series of structural equation and path analyses was conducted using AMOS Version 19 (Analysis of Moment Structures; Arbuckle, 1995) in order to examine the hypothesized relationships among study variables. A path analysis was conducted with the following constructs and represented as manifest indicators: 1) stressful life events; 2) shame; 3) guilt; 4) self-esteem; 5) depression; 6) anxiety; 7) hopelessness; and 8) SI measured pre-release/transfer (See Figure 1). Exploratory model testing based on theory and model fit indices were then conducted to improve the fit of the model. Finally,

a test of group differences was conducted using structural equation modeling to compare

these models across sex, race, age, and psychiatric history (treatment and suicide

attempt). Model fit was examined first in one-sample tests for each group and then, if fit

was acceptable, together in a multi-group comparison. Model fit was explored in all

models using Root Mean Square Error of Approximation (RMSEA), Normed Fit Index

(NFI), Comparative Fit Index (CFI), and Chi-square values. Throughout data analysis,

full information maximum likelihood estimation with robust standard errors was used;

this approach uses all of the information of the observed data to create parameter

estimates and standard errors, and is an attempt to address the missing data in the sample.

Results

Means, standard deviations, and intercorrelations of study variables are shown in

Tables 2 and 3. Notably, all variables included in the model were correlated with SI, with

the exception of guilt. All continuous study variables were normally distributed, with

skewness and kurtosis values less than 1.8 (Field, 2009).

Table 2: Intercorrelations, means, and standard deviations of continuous variables

Variable	1	2	3	4	5	6	7	8
1. SI	-							
2. Stress	.35**	-						
3. Shame	.29**	.24**	-					
4. Guilt	-.12	-.11*	-.11**	-				
5. Self-Esteem	-.41**	-.48**	-.44**	.23**	-			
6. Depression	.47**	.61**	.40**	-.16**	-.71**	-		
7. Anxiety	.41**	.47**	.43**	-.13**	-.57**	.75**	-	
8. Hope	-.24**	-.33**	-.12**	.38**	.54**	-.48**	-.33**	-
Mean	49.94	64.94	2.10	4.28	3.84	57.97	55.32	3.90

SD	8.45	13.60	.58	.55	.69	12.90	11.31	.67

Table 3: Intercorrelations of covariates with continuous variables

	SI	Stress	Shame	Guilt	Self-esteem	Depression	Anxiety	Hope
Age	-.04	.12*	-.03	.21**	-.03	.00	-.06	.06
Gender	.15*	-.07	.12**	-.15**	.11*	-.08	-.16**	.01
Race	.17**	.05	.12**	.00	-.16	.17**	.11*	-.23**
Psych History	.09	.19**	.01	.02	-.17**	.20**	.17**	-.21**
Suicide Attempt	.29**	.20**	.09	.02	-.23**	.30**	.33**	-.21**

The path analysis examining the effects of stressful life events, shame, guilt, self-esteem, depression, anxiety, and hopelessness on SI during incarceration provided poor fit for the data ($\chi^2[38] = 689.81$, p = .000; NFI = .56; CFI = .56, RMSEA = .17).
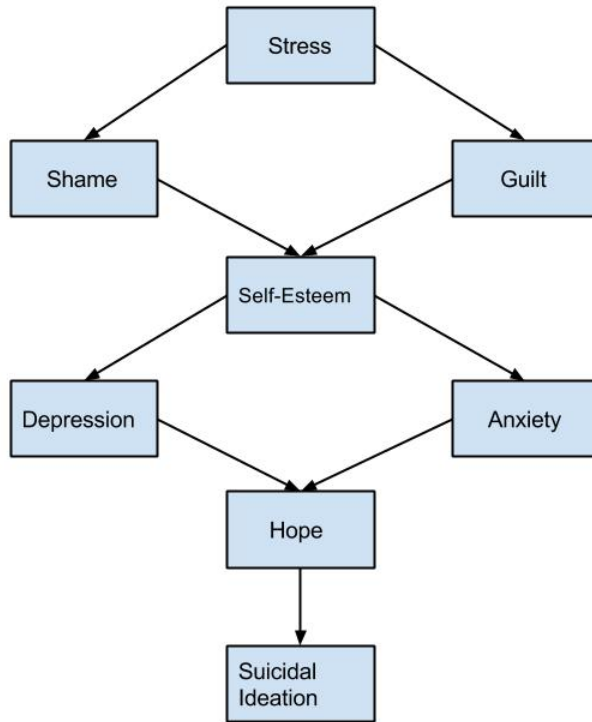
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Figure 1: Proposed model

 The model was adjusted using model fit indices to build a theoretically-supported model

that provided a better fit to the data (Kline, 2011). Error correlations were added between

guilt and shame and between depression and anxiety because they represent subscales

from the same measures and are theoretically related in Baumeister's model. This model

provided significantly better fit ($\chi^2 \Delta$ [4] = 237.57, p = .000), but was still not within the

acceptable range (χ^2[34] = 452.24, p = .000; NFI = .71; CFI = .72, RMSEA = .14). Guilt,

which was the only variable not correlated with SI in bivariate analyses, was removed

from the model. This model provided significantly better fit ($\chi^2 \Delta$ [8] = 62.5, p = .00), but

model fit was still not within the acceptable range (χ^2[26] = 389.74, p = .00; NFI = .73;

CFI = .74, RMSEA = .15). Model fit indices indicated that the addition of nine paths to connect related variables in the model would produce a significantly better fit. This is logical given that all variables except SI were measured at the same time point and tend to be correlated in the literature. Paths were added one at a time, with each iteration producing a significantly better fitting model. The final model provided excellent fit to the data ($\chi^2[4] = 7.01$, $p = .14$; NFI = 1.00; CFI = 1.00, RMSEA = .04). The standardized coefficients from the path analysis are shown in Figure 2.
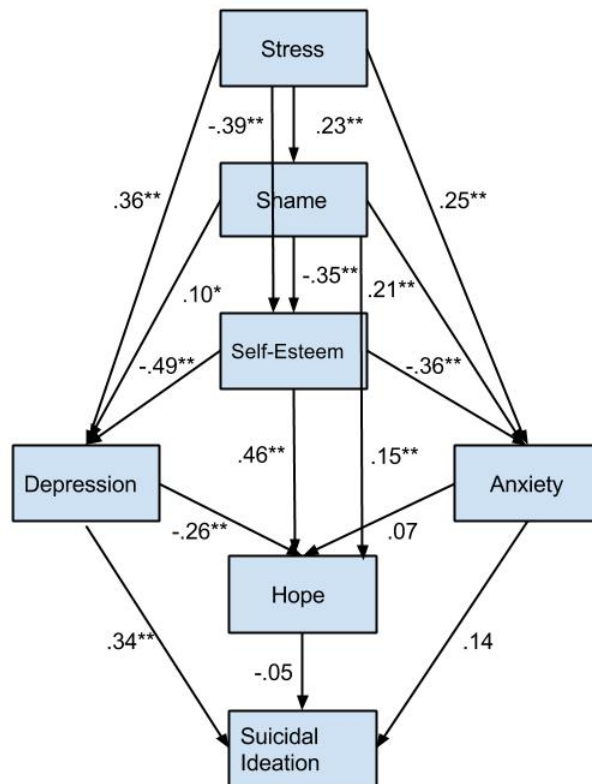

Figure 2: Exploratory model for whole sample

Stressful life events had a significant positive effect on shame (β = .23), depression (β = .36), and anxiety (β =.25), and a significant negative effect on self-esteem (β = -.39). Shame had a significant negative effect on self-esteem (β = -.35), and significant positive effects on depression (β = .10), anxiety (β = .21), and, unexpectedly, hope (β = .15). Self-esteem had a significant negative effect on depression (β = -.49) and anxiety (β = -.36), and a significant positive effect on hope (β = .46). Depression had a significant negative effect on hope (β = -.26) and a significant positive effect on SI (β = .34). Non-significant paths included anxiety to hope and to SI, and from hope to SI.

Group Differences

Sex

A multiple group test was conducted to test whether the exploratory model varied significantly by sex (female N =3 191). The chi square difference test was used to compare the model with all structural pathways free to vary to a model with all structural pathways constrained to be equal across groups. Results showed that the model with all structural pathways free to vary fit the data acceptably (χ^2[8] = 11.37, p = .18; NFI = .99; CFI = 1.00, RMSEA = .03), but fit was significantly worse when structural pathways were constrained to be equal across groups (χ^2[24= 32.04, p = .01; NFI = .97; CFI = .99, RMSEA = .04; $\chi^2 \Delta$ [16] = 30.66, p = .02). This suggests that there are significant differences between females and males for pathways in the structural model. To determine specific pathway differences, critical difference ratios (z-scores) were calculated comparing pathways across groups. Four pathways were significantly different between females and males.

First, the pathway from stress to shame differed as a function of gender. For females, stress was associated with more shame ($\beta = .38$, $p = .00$). For males, the pathway from stress to shame was smaller in magnitude ($\beta = .15$, $p = .01$; $z = -2.69$, $p < .01$). Second, the pathway from self-esteem to hope differed as a function of gender. For females, self-esteem was associated with more hope ($\beta = .63$, $p = .00$). For males, the pathway from self-esteem to hope was smaller in magnitude ($\beta = .37$, $p = .00$; $z = -2.43$, $p < .05$). Third, the pathway from depression to SI was significantly different between males and females. For females, this pathway was non-significant ($\beta = .06$, $p = .69$), while depression was significantly associated with more SI for males ($\beta = .47$, $p = .00$; $z = 2.84$, $p < .01$). Fourth, anxiety was associated with significantly more SI for females ($\beta = .50$, $p = .00$), while this pathway was non-significant for males ($\beta = .03$, $p = .75$; $z = -2.13$, $p < .05$).
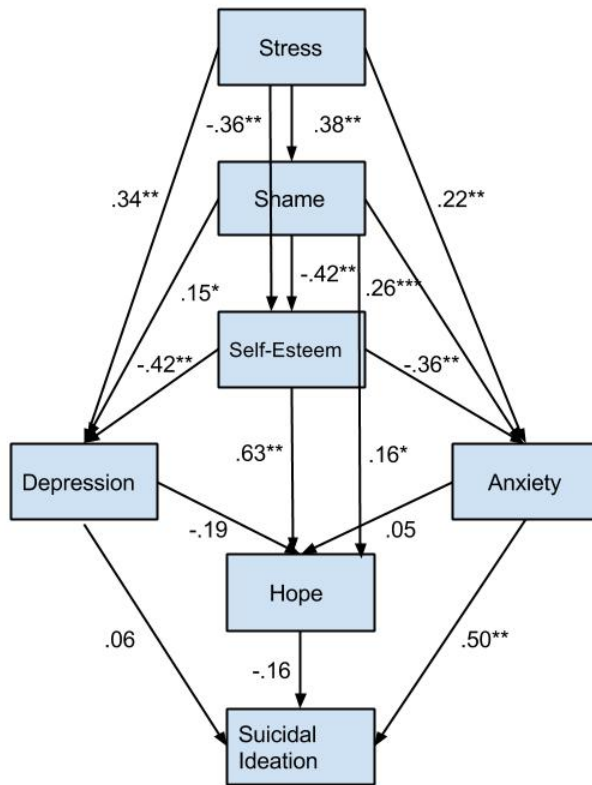
Figure 3: Exploratory model for females

Figure 4: Exploratory model for males

Race

A multiple group test was conducted to test whether the exploratory model varied significantly by race (black ($N = 259$) vs. white ($N = 214$)). The chi square difference test was used to compare the model with all structural pathways free to vary to a model with all structural pathways constrained to be equal across groups. Results showed that the model with all structural pathways free to vary fit the data acceptably ($\chi^2[8] = 14.00$, p = .08; NFI = .99; CFI = 1.00, RMSEA = .04), and fit was significantly worse when structural pathways were constrained to be equal across groups ($\chi^2[24] = 45.82$, p = .01; NFI = .96; CFI = .98, RMSEA = .04; $\chi^2 \Delta[16] = 31.82$, p = .01). This suggests that there

are significant differences between black and white participants for pathways in the structural model. Three pathways were significantly different between black and white participants.

First, the pathway from self-esteem to hope differed as a function of race. For white participants, self-esteem was significantly associated with more hope ($\beta = .64$, $p = .00$). For black participants, the pathway from self-esteem to hope was smaller in magnitude ($\beta = .43$, $p = .00$; $z = -2.03$, $p < .05$). Second, the pathway from hope to SI differed as a function of race. For white participants, hope trended towards significance in association with lower SI ($\beta = -.18$, $p = .08$). For black participants, the pathway from hope to SI was positive and also non-significant ($\beta = .13$, $p = .20$; $z = -2.16$, $p < .05$). Third, the pathway from anxiety to SI differed as a function of race. For white participants, this pathway was non-significant ($\beta = -.13$, $p = .40$), while anxiety was significantly associated with SI for black participants ($\beta = .29$, $p = .02$; $z = 2.14$, $p < .05$).

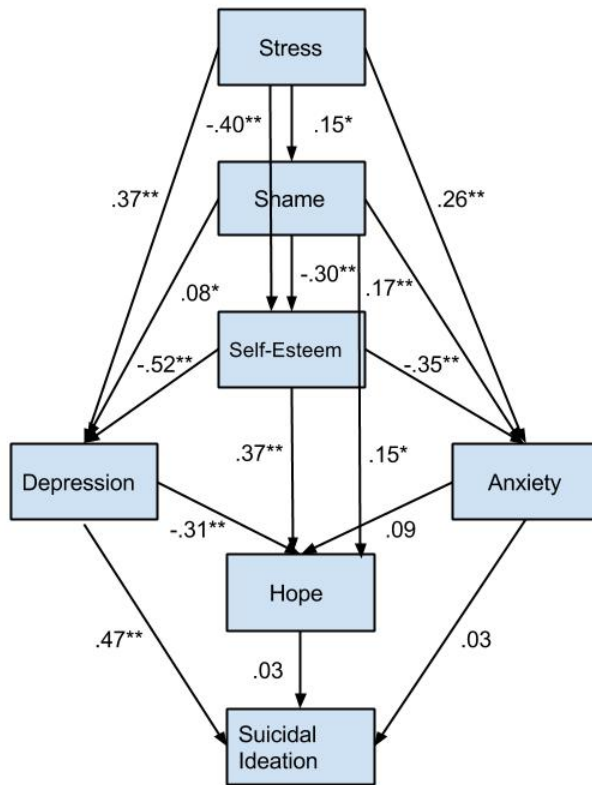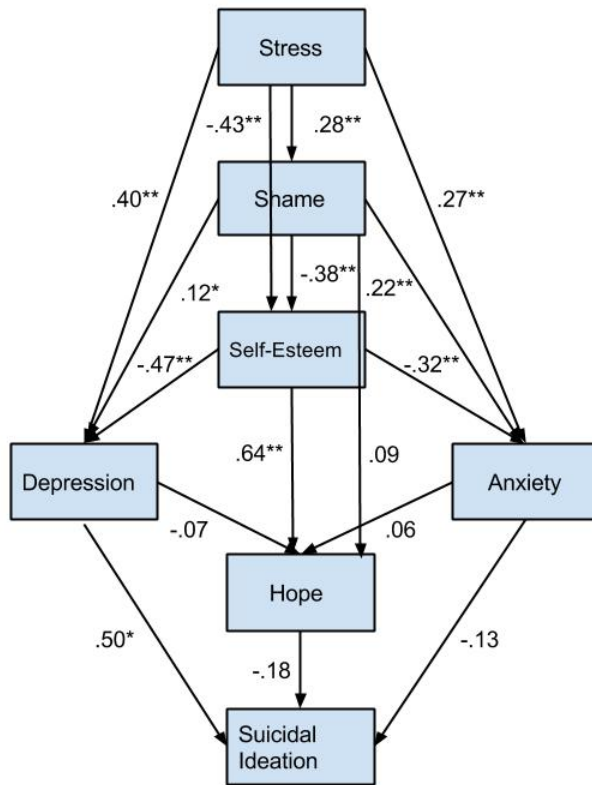**Figure 5: Exploratory model for white participants**
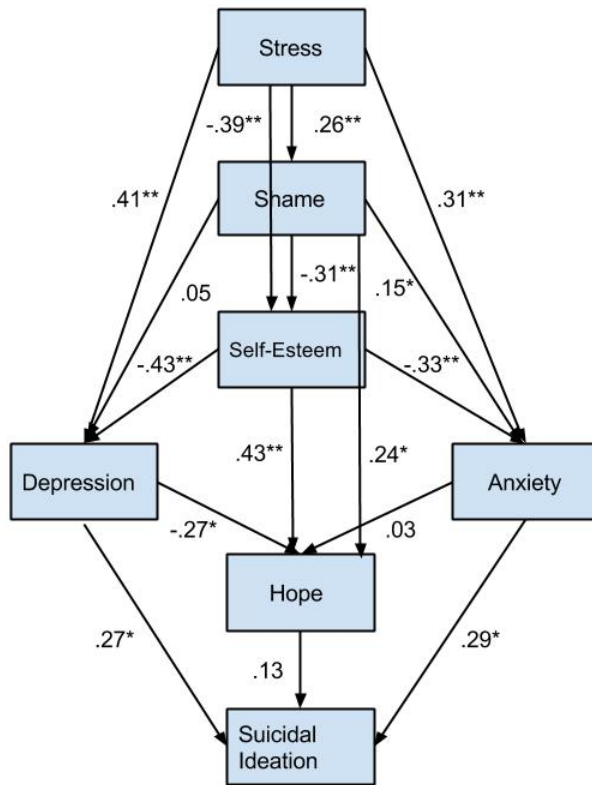
Figure 6: Exploratory model for black participants

Age

A multiple group test was conducted to test whether the exploratory model varied significantly by age using a median split (younger (N = 296), < 30.86) and older (N = 297), ≥30.86)) participants. The chi square difference test was used to compare the model with all structural pathways free to vary to a model with all structural pathways constrained to be equal across groups. Results showed that the model with structural pathways free to vary across groups fit the data acceptably (χ^2[8] = 18.88, p = .02; NFI = .99; CFI = .99, RMSEA = .05), and fit was significantly worse when structural pathways were constrained to be equal across groups (χ^2[24] = 53.28, p = .00; NFI = .96; CFI = .98,

RMSEA = .05; $\chi^2\,\Delta$ [16] = 34.00, p = .01) This suggests that that there are significant differences between younger and older participants for pathways in the structural model. Four pathways were significantly different between younger and older participants.

First, the pathway from shame to self-esteem differed as a function of age. For younger participants, shame was associated with lower self-esteem (β = -.42, p = .00). For older participants, the pathway from shame to self-esteem was smaller in magnitude (β = -.27, p = .00; z = 2.76, p < .01). Second, the pathway from depression to hope differed as a function of age. For younger participants, depression was significantly associated with lower hope (β = -.40, p = .00). For older participants, the pathway from depression to hope was non-significant (β = -.15-, p = .06; z = -2.03, p < .05). Third, the pathway from anxiety to hope differed as a function of age. For younger participants, anxiety was positively and significantly associated with hope (β = .22, p = .01), while anxiety was not significantly associated with hope among older participants (β = -.03, p = .68; z = -2.27, p < .05). Fourth, the pathway from depression to SI differed as a function of age. For younger participants, depression was significantly associated with more SI (β = .54, p = .00). For older participants, this pathway was not significant (β = .16, p = .21; z = -2.39, p < .05).
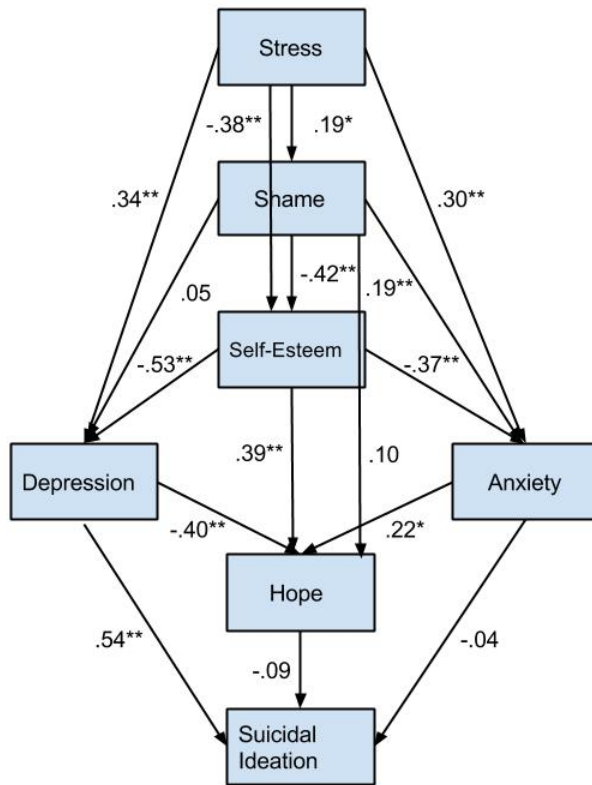
Figure 7: Exploratory model for younger participants
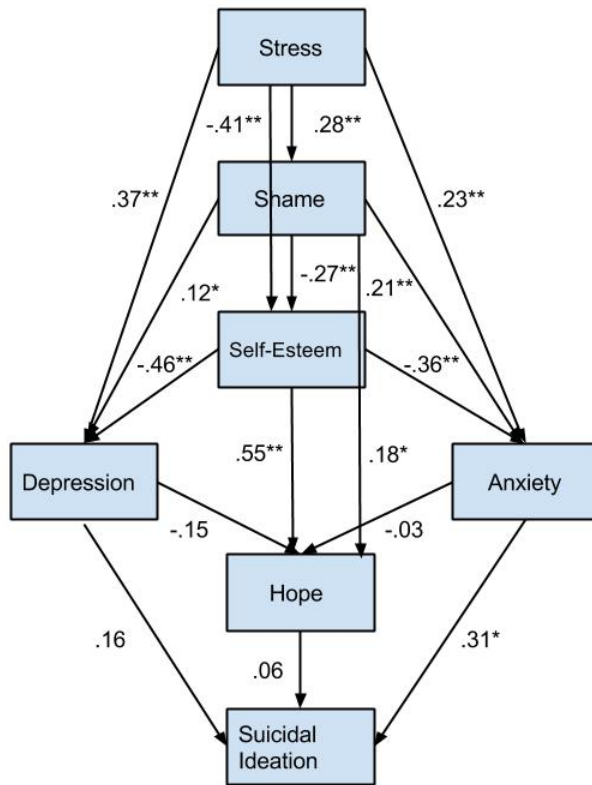
Figure 8: Exploratory model for older participants

Psychiatric Treatment History

A multiple group test was conducted to test whether the exploratory model varied

significantly by presence ($N = 294$) versus absence ($N = 88$) of history of psychiatric

treatment. The chi square difference test was used to compare the model with all

structural pathways free to vary to a model with all structural pathways constrained to be

equal across groups. Results showed that the model with all structural pathways free to

vary across groups fit the data acceptably ($\chi^2[8] = 7.40$, p = .50; NFI = .99; CFI = 1.00,

RMSEA = .00), and fit was significantly worse when structural pathways were

constrained to be equal across groups ($\chi^2[24] = 47.87$, p = .00; NFI = .96; CFI = .98,

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RMSEA = .05; $\chi^2 \Delta [16]$ = 40.47, p = .00). This suggests that there are significant differences between those with versus without a history of psychiatric treatment for pathways in the structural model. Four pathways were significantly different between participants with versus without a history of psychiatric treatment.

First, the pathway from stress to shame differed as a function of psychiatric treatment history. For those with a history of psychiatric treatment, stress was associated with more shame (β = .34, p = .00). For those without this history, the pathway from stress to shame was non-significant (β = .10, p = .36; z = -2.34, p < .05). Second, the pathway from self-esteem to depression differed as a function of psychiatric history. For participants with a psychiatric treatment history, self-esteem was significantly associated with less depression (β = -.53, p = .00). For those without a psychiatric treatment history, the pathway from self-esteem to depression was smaller in magnitude (β = -.39, p = .00; z = 2.88, p < .01). Third, the pathway from stress to anxiety differed as a function of psychiatric treatment history. For those with a psychiatric treatment history, stress was positively and significantly associated with anxiety (β = .27, p = .00), while stress was not significantly associated with anxiety among those without a history of psychiatric treatment (β = .16, p = .10; z = -2.14, p < .05). Fourth, the pathway from shame to hope was significantly different between those with versus without a history of psychiatric treatment. For participants with a history of psychiatric treatment, shame was not significantly associated with hope (β = .03, p = .57). For those without a psychiatric treatment history, shame was significantly associated with more hope (β = .38, p = .00; z = 3.10, p < .01).
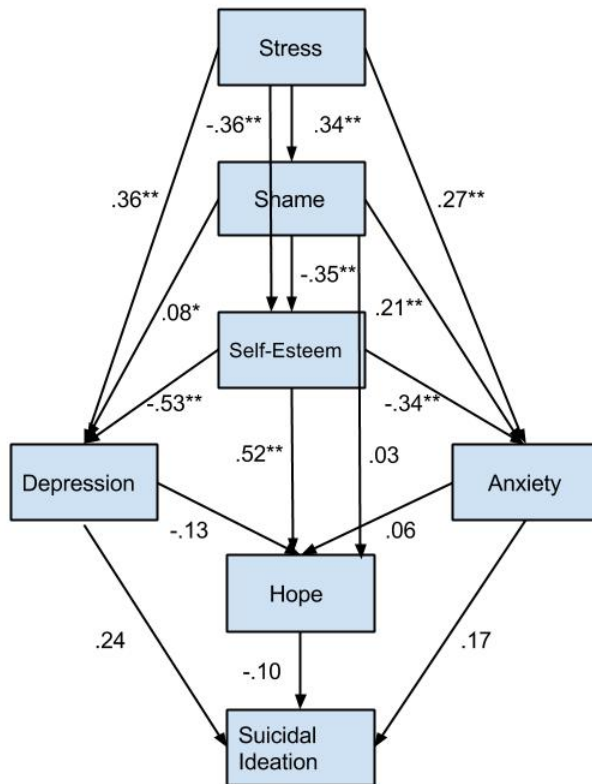
Figure 9: Exploratory model for participants with history of psychiatric treatment
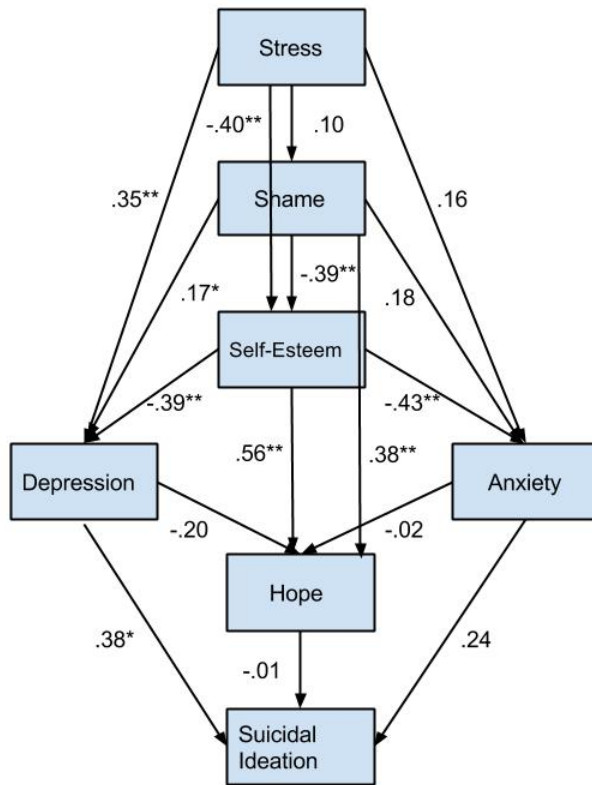
Figure 10: Exploratory model for participants without history of psychiatric treatment

Suicide Attempt History

A multiple group test was conducted to test whether the exploratory model varied significantly by presence ($N = 53$) versus absence ($N = 401$) of history of a suicide attempt. The chi square difference test was used to compare the model with all structural pathways free to vary to a model with all structural pathways constrained to be equal across groups. Results showed that the model with structural pathways free to vary across groups fit the data acceptably ($\chi^2[8] = 13.20$, p $= .11$; NFI $= .99$; CFI $= 1.00$, RMSEA $= .04$). Fit was not significantly different when all structural pathways were constrained to be equal across groups ($\chi^2[24] = 36.19$, p $= .05$; NFI $= .97$; CFI $= 1.00$, RMSEA $= .03$; χ^2

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Δ [16] = 22.99, p = .11). This suggests that the paths in this model were not moderated by suicide attempt history.

Discussion

The present study examined Baumeister's escape theory of SI longitudinally in a U.S. jail sample using path analyses. Study findings indicated that each of the stages included in the escape theory of suicide (with the exception of guilt) were significantly correlated with SI over the course of incarceration. These results are consistent with prior cross-sectional research that found support for the bivariate relationships between these clinical factors and SI (Bonner & Rich, 1990; Zhang et al., 2010; Ivanoff et al., 1996; Lekka et al., 2006; Sarchiapone et al., 2009; Carli et al., 2010, Pereira et al., 2010). However, the originally proposed escape model, which included full mediation of variables prior and subsequent to each stage, resulted in poor model fit. Although fit improved significantly when the error terms between shame and guilt, and between depression and anxiety were added, model fit was still not acceptable. These study results indicate that the "stages" leading to SI and behavior proposed by Baumeister may not fully mediate each other in a U.S. jail sample.

An exploratory model developed from theory, prior research, and model fit indices resulted in the removal of guilt from the model and the addition of nine paths (stress to depression, anxiety, and self-esteem; shame to depression, anxiety and hope; self-esteem to hope; and anxiety and depression to SI). This model provided excellent fit for the data in the sample as a whole. All pathways were significant except anxiety to hope and to SI, and from hope to SI. These findings are consistent with Dean and

colleagues prior tests of the escape theory of suicide conducted with college students and clinical samples. Specifically, they found that the addition of paths from an "early" to a "later" stage in Baumeister's model was necessary to achieve adequate model fit (Dean & Range, 1996). They also failed to find a direct association between hopelessness and SI (Dean & Range, 1996; Dean et al., 1996; Dean & Range, 1999). Thus, it appears that jail inmates who express SI may concurrently experience multiple adverse psychological states and emotions, which are all interconnected. The first six "stages" were significantly related to each other (e.g., stress, shame, self-esteem, depression, anxiety, and hope). Notably, as suggested above, anxiety and hope did not predict SI over the course of incarceration. Only the paths from stress to depression to SI remained significant. Results are consistent with prior cross-sectional research that found support for the relationships between stress and depression with SI (Ivanoff et al., 1996; Lekka et al., 2006; Sarchiapone, Carli, Di Giananntonio, & Roy, 2009; Carli, Jovanovic, Podlesek, Roy, Rihmer, Maggi, Marusic, Cesaro, Marusic, & Sarchiapone, 2010; Pereira et al., 2010; Zhang et al., 2010). Thus, initial reports of stress and depression upon incarceration may play a particularly important role in the development and/or maintenance of SI in jail inmates.

Interestingly, guilt was not bivariately correlated with SI in the present study and fit improved significantly when it was removed from the model. While this finding is inconsistent with prior research supporting a significant association between guilt and suicidal thoughts and behaviors in incarcerated samples (Dooley, 1990; Lekka et al., 2006), it is consistent with research indicating that shame and guilt may function

differently (Wicker, 1983; Muris et al., 2014; Oktedalen et al., 2014). Prior research on proneness to shame and guilt suggests that guilt may act as a protective factor for maladaptive behavior, while shame increases risk for such outcomes, including more psychological symptoms. Jail inmates who experience shame may feel bad about *themselves* and think about escaping this negative emotion via suicide, while those who feel guilt focus on the bad *behavior* and may seek to correct it through more positive means (Hastings, Northman, & Tangney, 2000). As expected, shame was significantly related to low self-esteem, depression, and anxiety. Unexpectedly, shame had a significant positive effect on hope. These findings are counter-intuitive and may suggest that variance subsumed in prior stages of the model affected the direction of this path, given that shame and hope were negatively associated in bivariate correlations.

The present study also examined potential group differences in the escape theory of suicide related to sex, race, age, history of psychiatric treatment, and suicide attempt history. Results indicated that the proposed model functioned differently in male and female jail inmates. Specifically, the paths from stress to shame, self-esteem to hope, depression to SI, and anxiety to SI were significantly different between these groups. For female inmates, stress was associated with more shame than in male inmates. These findings may indicate that female inmates are more likely than male inmates to internalize reactions to the stress of incarceration and blame them*selves* for such situations, rather than others or external factors. This is consistent with results of a recent meta-analysis indicating that women are more prone to experience situation-based shame than men as a reflection of gender norms (Else-Quest, Higgins, Allison, & Morton,

2012). Gender norms about incarceration and/or its effects (e.g., separation from children and family) may increase shameful reactions to the stress of incarceration in women who blame themselves for being in jail and for its consequences. Findings also indicate that low self-esteem was associated with lower hope among female relative to male inmates. Results are consistent with research showing that low self-esteem predicts hopelessness (Chioqueta & Stiles, 2007) and indicate that for female inmates in particular, negative judgments of self-worth are related to less hope and optimism about the future. Interestingly, anxiety predicted SI among female inmates (but not males), while depression predicted SI among male inmates (but not females). Results are consistent with one study that examined gender differences in SI among Chinese prisoners that also found that depression was a significant risk factor for SI in males, but not females (Zhang et al., 2010). Thus, anxiety related to the stress of incarceration may be a more important risk factor for SI in female jail inmates, while depressive responses are more important in male jail inmates. These findings are also consistent with research that suggests that women have higher prevalence rates of anxiety disorders than men, and that this anxiety is more disabling for women (McLean, Asnaani, Litz, & Hofmann, 2011). Additionally, incarcerated women are more likely to have a history of trauma and abuse than incarcerated men (Maloney, ver der Bergh, & Moller, 2009), and experience more PTSD symptoms, including anxiety, at rates six to ten times higher than in the general population (Goff et al., 2007). Study results suggest that those female inmates who report symptoms of anxiety may also experience SI.

Results also indicated that the exploratory model functioned differently for white vs. black participants with regard to three pathways. For white inmates, low self-esteem was associated with less hope than for black inmates. Additionally, hope trended toward significance in predicting less SI in white inmates, but the relationship was insignificant for black inmates. Interestingly, this pattern of results is somewhat consistent with a prior study that found that hope moderated the association between depression and SI among white, but not black, college students (Hirsch, Visser, Chang, & Jeglic, 2012). The authors conclude that even among white individuals who report feelings of worthlessness, a position of historical social dominance may allow for greater attunement to the potential for successful goal attainment and, thus, less SI. Finally, anxiety significantly predicted more SI among black, but not white, inmates. This pattern is inconsistent with one study that found that anxiety disorders were associated with SI in white, but not black, older adults (Vanderwerker et al., 2007). This anxiety may stem from perceived discrimination, oppression, and/or fear of mistreatment by the correctional staff or judicial system. Results of the present study suggest that black jail inmates who experience anxiety in response to the stress of incarceration may be more prone to think about suicide.

Age also moderated four of the pathways in the exploratory model. For younger inmates (e.g., < 31 years old), shame was associated with lower self-esteem than among older (e.g., ≥ 31 years old) inmates. This pattern of results is consistent with noted developmental fluctuations in self-esteem. Specifically, research suggests that self-esteem drops during adolescence and becomes more stable as individuals reach 30 (Ry & Orth,

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2011; Robins et al., 2002). It then rises gradually throughout young (Robins et al., 2002) and older adulthood (Wagner et al., 2013), but then sharply declines in old age (Robins et al., 2002). For younger jail inmates, feelings of shame about incarceration may be more likely to negatively affect self-esteem than for older inmates, who have already developed a more stable level of self-esteem that is not as easily affected by incarceration. Also notable is that depression predicted less hope and more SI, while anxiety predicted more hope, among younger inmates only. These relationships were not significant in older inmates. In fact, only the pathways from stress to anxiety predicted SI in older inmates. Results related to depression, low hope, and SI among younger inmates are consistent with a large body of theoretical and empirical research (e.g., Beck et al., 1985; Beck et al., 1993; Beck et al., 1999). Cognitive theories of suicide posit that individuals who respond to events with negative thoughts about themselves, the world, and the future, are more likely to become hopeless about their ability to cope with the situation and thus, consider suicide. Results of the present study suggest that this pattern is relevant for younger, but not necessarily older, jail inmates. Younger inmates may have relatively fewer coping resources and view the impact of incarceration more negatively than older inmates who have more life experience and, potentially, stability (e.g., spouse, career, children). Alternatively, results may potentially reflect that older inmates have had more opportunity for repeat incarcerations and are more knowledgeable about the process. Thus, they may be less likely to respond to incarceration with depression and hopelessness than younger inmates. The finding that anxiety predicted more hope among younger inmate was surprising, given that these variables were negatively correlated in

bivariate analyses and that anxiety is typically associated with worry and pessimism about the future, rather than optimism or hope.

Also notable is that the model functioned differently for those with vs. without a history of psychiatric treatment. Specifically, stress was associated with more shame and anxiety in those with a history of psychiatric treatment, but was not related to shame and anxiety in inmates without a psychiatric treatment history. Low self-esteem was also associated with more depression in those with a history of psychiatric treatment history than those without this history. Findings may indicate that a history of clinical symptoms warranting treatment among adults sent to jail, potentially reflective of a heightened genetic loading for psychiatric disorders, may increase the likelihood that these symptoms will emerge under conditions of high stress, such as incarceration. However, none of the paths leading to SI were significant for those with a history of psychiatric treatment. Results may indicate that coping skills learned in past treatment may decrease the likelihood of suicidal thinking in response to psychiatric distress during the incarceration period. Among inmates with no history of psychiatric treatment, stress and depression predicted SI. Unexpectedly, shame had a significant positive effect on hope among those with no history of psychiatric treatment, but not among those with a history of treatment. Again, this finding may reflect that variance subsumed in prior stages of the model affected the direction of this path, given that shame and hope were negatively associated in bivariate correlations.

With regard to group differences across suicide attempt history, no significant differences were found. Results suggest that the exploratory model fits equally well

across these groups. However, it is important to note that the number of participants with a history of a suicide attempt ($N = 53$) was quite small, thus there may not have been sufficient power to detect differences between suicide attempters and non-attempters.

Taken together, results provide little support for the sequence of clinical risk factors posited by Baumeister's (1990) escape theory of suicide. In fact, the originally proposed model with full mediation of stages provided poor fit to the data, suggesting that clinical risk factors do not progress in "stages" leading to SI. Although the exploratory model provided excellent fit to the data, only the pathways from stress to depression were significant in the overall sample, as well as for inmates who were male, white, younger, or had no psychiatric treatment history. Only the paths from stress to anxiety predicted more SI for female, black, and older inmates. For inmates with a history of psychiatric treatment, none of the paths leading to SI were significant. While results do not support Baumeister's "stage" model of suicide, they are consistent with prior research that supports an association between the clinical risk factors under investigation and SI, as well as other leading theories of suicide (e.g., cognitive theory, psychache) that incorporate many of these clinical risk factors.

The results of the present study hold important clinical implications. Findings indicate that clinical risk factors for SI included in leading theories of suicide, including Baumeister's escape theory (though not in the proposed stage sequence), are important to consider in a U.S. jail sample. Specifically, stress, shame (but not guilt), low self-esteem, depression, anxiety, and low hope are related to SI in this sample. Further, inmates who experience high levels of these risk factors upon intake may be at greater risk for

experiencing SI over the course of incarceration. Thus, early screening for these clinical risk factors could help to identify inmates at risk for SI and triage them to appropriate mental health care. Empirically-supported interventions such as cognitive-behavioral therapy, which employs problem solving, cognitive restructuring, and affect regulation techniques to remediate negative appraisals and behaviors associated with a range of psychological symptoms (e.g., depression, anxiety, SI) may be particularly helpful for inmates. Early assessment and intervention could help prevent future suicidal thoughts and behaviors in U.S. jail inmates.

Although results of the current study provide important evidence for clinical risk factors for SI over the course of incarceration, several important limitations should be considered. First, the measure of SI used did not contain much detail about the nature of these thoughts. Future research should employ measures of suicidal thoughts and behaviors that capture frequency, intensity, and purpose of these thoughts and behaviors, in order to better understand these relationships. Additionally, administration of such measures of SI at multiple time points could provide a better understanding of the course of SI throughout incarceration, as well as any fluctuations. Second, the measure of hope used was not a standard measure of hopelessness. Future studies should employ gold standard measures (e.g., Beck Hopelessness Scale). Third, although the sample was diverse in terms of sex, race, and age, there may not have been sufficient diversity in suicide attempt history to detect group differences in risk factors for SI. Future studies should examine these differences in sufficient sample sizes. Fourth, the final exploratory model had only four degrees of freedom. Most models that are this close to being fully

saturated fit the data adequately. Finally, the clinical risk factors for SI examined in the model were all measured at one time point. Thus, the "stage" or sequential component of Baumeister's escape theory of suicide could not be adequately tested. Although the current study did look at SI longitudinally, future research may wish to examine this model using clinical risk factors in a longitudinal design as well. Continued theory building and testing in this area is needed to improve our knowledge and understanding of SI in jail populations.

APPENDIX A

Suicide is the second leading cause of death in U.S. jails (Metzner, 2002). Over 400 inmates kill themselves each year (Hayes, 2005). Suicide rates are estimated to be approximately nine times higher in U.S. jails than in the general population (Daniel, 2006) and nearly three times higher than in U.S. prisons (Mumola, 2005). In 2006, jail suicides occurred at a rate of 36 per 100,000 inmates (Hayes, 2010). However, the prevalence may be even higher due to unreported suicides. These deaths may be reported as accidental (Haycock, 1991), particularly among institutions that fear legal repercussions (Daniel, 2006). Additionally, inmates who die at a hospital following a suicide attempt may not be included in statistics reflecting jail suicides.

Despite the possibility of underreporting, jail suicides are more consistently documented than suicide attempts in U.S. jails. Suicide attempts are the strongest predictors of suicide completions in incarcerated populations (Fruehwald, Matsching, Koenig, Bauer, & Frottier, 2004; Hayes, 2010). Yet suicide attempts during incarceration are not always recorded in institutional records. Rates of intentional self-harm and suicide attempts among Washington, DC inmates have been estimated at 1,380 per 100,000 inmates (Sloane, 1973). In a study of 124 inmates who attempted suicide in Washington State over a 33-month period, Goss, Peterson, Smith, Kalb, & Brodey (2002) concluded that suicide attempts in jails outnumber suicide completions by 80 to one.

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Suicidal ideation, a common precursor to suicide attempts and completions, is also prevalent among prison inmates. In the general population, suicidal ideation is one of the strongest predictors of suicidal behavior, as it precedes most suicide attempts and predicts both attempts and completions (Kachur et al., 1995; Lewinsohn et al., 1996; Beck et al., 1999; Brown et al., 2000; Borges et al., 2008). In a review of 34 studies of prison suicides that included case controls, 12 of which were conducted in the U.S., suicidal ideation was found to be strongly associated with completed suicide (Fazel, Cartwright, Norman-Nott, & Hawton, 2008). It has also been associated with past attempts during incarceration in U.S. prisons (Ivanoff, Jang, & Smyth, 1996). Although data have not been published on the overall prevalence of suicidal ideation among U.S. jail inmates, one study found that 72% of suicide victims reported suicidal ideation during incarceration in Texas prisons (He, Felthous, Holzer, Nathan, & Veasey, 2001). Similarly, in a study conducted with a Chinese prison sample, 70% reported suicidal ideation in the last week (Zhang, Grabiner, Zhou, & Li, 2010). Moreover, a study of male jail inmates indicated that 77% reported suicidal ideation during incarceration. As is evident, suicidal thoughts and behaviors represent a significant public health problem in U.S. jails and prisons.

In addition to tragedy associated with the personal loss of life, suicides among jail inmates are also devastating to the victim's family and correctional staff (Hayes, 2010). Many inmate suicides result in litigation, so there is also a high financial cost to facilities, with several federal court juries recently awarding over $1million to victims' families. Though many correctional institutions have taken steps to prevent suicide, implementing

suicide screening and prevention programs, research suggests that these efforts have not been met with great success. Indeed, results of a psychological autopsy study conducted on 464 jail inmates who committed suicide in the U.S. from 2005-2006, revealed that 47% of victims were assessed by a clinician within three days of their death (Hayes, 2010). The relatively high prevalence of suicidal behavior and ideation in incarcerated populations, in combination with failed attempts at suicide risk assessment and prevention, suggest that a more thorough understanding of suicidal ideation and its risk factors in U.S. jails is sorely needed.

Leading Theories of Suicide

Among the theories seeking to explain suicidal behavior over the last century, there have been several dominant formulations (Joiner, 2005). The first theory was put forth by Emile Durkheim in 1897 and focused on the role of social forces, rather than individual factors. Durkheim posited that low integration into society could produce purposelessness and desperation, resulting in suicide. Alternatively, too much integration into society could lead to individuals sacrificing themselves for the greater good of the group in order to avoid burdening others. According to Durkheim, suicide could also be caused by sudden changes in social status, as after an economic upheaval, or by leading an unrewarding life. Although Durkheim's theory dominated for half a century and has received support in samples from the general population (e.g., Breault, 1986), its lack of consideration of the role of genetics and mental illness caused it to lose prominence over time. No studies to date have tested this theory in an incarcerated population.

Aaron Beck has played a leading role in the development of a cognitive-behavioral model of suicide (e.g., Beck, Steer, Kovacs, & Garrison, 1985). According to this model, negative thoughts and depressogenic styles of thinking produce hopelessness, which in turn leads to suicidal thoughts and behavior. Moreover, once an individual has experienced suicidal thoughts or behavior, depressive or hopeless-suicidal modes of responding may become more accessible and active in response to future stressful experiences. Greater exposure to such experiences reinforces this cycle, such that hopeless thinking and suicidal thoughts and behaviors eventually become favored over other modes of responding in the face of stress. Support for the role of hopelessness in suicide risk during incarceration has been found in two studies. One study found that higher levels of hopelessness were associated with a history of parasuicidal behavior (i.e., self-injurious behavior with or without suicidal intent) in a sample of 130 male New York State prisoners (Ivanoff et al., 1996). A second study found that hopelessness was reported as a primary reason for suicidal ideation in a sample of 67 Greek prisoners with recent (last week) suicidal ideation (Lekka, Argyriou, & Beratis, 2006).

A third leading theory of suicide was put forth by Schneidman (1993), referred to as psychache theory. According to Schneidman's psychache theory, suicide is caused by psychological pain that stems from thwarted psychological needs (e.g., achievement, affiliation, autonomy, succorance, understanding). When this psychache (e.g., shame, guilt, humiliation, loneliness, fear, angst, dread, anguish) reaches intolerable levels, it becomes a proximal cause of suicide. This theory has been tested in a study of 73 Canadian prisoners and 180 college students (Pereira, Kroner, Holden, and Flamenbaum,

2010). Results indicated that psychache was associated with suicidal ideation, and accounted for unique variance in suicidal ideation above and beyond that accounted for by depression and hopelessness. Thus, preliminary evidence suggests that various types of psychological pain may play a role in suicide risk during incarceration.

Most recently, Joiner (2005) proposed an interpersonal theory of suicide, which posits that suicide is caused by the combination of a lack of perceived belongingness, perceived burdensomeness, and the acquired capacity to commit suicide. Specifically, according to Joiner, suicide occurs only when an individual has both the desire and ability to commit suicide. Individuals who perceive that they are alienated from others may develop the desire to kill themselves (lack of perceived belongingness). When they feel like they are a burden on friends or family and perceive that their death would be a relief to others (perceived burdensomeness), this desire is strengthened. Though perceptions of thwarted belongingness and perceived burdensomeness may lead to the desire to die or suicidal thoughts, Joiner posits that individuals will only act on these thoughts when they also possess the ability to engage in self-injury. According to Joiner, this capability is acquired through repeated exposure to painful and provocative experiences that reduce fear of injury, pain, and death. While this theory has received much support in the general population, it has not been tested to date in an incarcerated population.

Escape Theory of Suicide

A final leading theory of suicide is Baumeister's (1990) escape theory. According to Baumeister, suicide is motivated by an attempt to escape from negative self-awareness

caused by setbacks or disappointments that are attributed to oneself. Baumeister posits that suicidal individuals experience six stages that lead to a wish for escape. In the first step, a "severe experience" must occur that produces outcomes or circumstances far below one's standards. These experiences can include stressful life events such as daily hassles or negative life events. In the second step, these disappointing outcomes are blamed on oneself, thereby creating negative self-attributions. These negative self-attributions most often take the form of shame and guilt. In the third stage, self-blame for recent disappointments create an awareness of oneself as inadequate or incompetent, related in part to low self-esteem. Fourth, negative affect (depression and anxiety) arises from the belief that one is inadequate or incompetent. In the fifth stage, cognitive deconstruction, or focus on the present without meaningful thought about the future, occurs in the form of hopelessness. Finally, in the sixth stage, a lack of inner restraint and inhibitions (disinhibition) develops, which contributes to a willingness to consider suicide as an option. Baumeister posits that these steps are like choice points in a decision tree. They occur in sequence, forming a causal chain of events that lead to suicidal ideation, and culminate in a suicide attempt only when each step produces the aforementioned outcomes.

Baumeister's (1990) escape theory incorporates and builds upon the motivational and cognitive components offered in Durkheim's (1897) and Beck's (1985) theories. It also complements Schneidman's (1993) psychache theory in that both theories suggest that perceived failure precipitates various forms of psychological pain, which in turn plays a role in the development of suicidality. Unlike Joiner's theory, which suggests that

negative interpersonal states (i.e., burdensomeness and thwarted belongingness) play a central role in suicidal ideation, Baumeister's theory focuses more generally on the interpretation of negative life stress, which may be more relevant to an incarcerated population as discussed below.

Application of Baumeister's Escape Theory of Suicide to an Incarcerated Population

The escape theory of suicide may apply particularly well to the development of suicidal ideation in an incarcerated population. Generally, incarceration and/or the events leading up to it represent *negative life stress* that may trigger a desire to escape from negative self-awareness for many inmates. Short-term incarceration in jails is particularly stressful for several reasons. Researchers theorize that it represents a crisis for most inmates, who must cope with their arrest, and adjust to confinement and uncertainty about the legal process and its outcomes (Bonner & Rich, 1992; Bonner, 2000). Jail conditions are typically noisy, crowded, and poorly ventilated, creating a tense and stressful environment (Winkler, 1992). Hours of unstructured time and victimization by other inmates also serve to make it an unsupportive environment. Additionally, isolation in the form of both segregation and disrupted interpersonal attachment can exacerbate the stress of the crisis of incarceration as inmates are isolated from their support systems and normal coping mechanisms.

In the face of these various forms of negative life stress, inmates may experience *shame* and/or *guilt*, particularly those prone to these types of emotions, in reference to their offense or the consequences of incarceration (e.g., letting friends or family members down). These emotions may then negatively affect *self-esteem*, as some inmates question

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their self-worth or value as human beings. For some, this self-doubt may lead to symptoms of *depression* and *anxiety*, particularly when inmates consider the difficulties of incarceration (e.g., limited freedom, little contact with family) and its consequences (e.g., financial difficulty and reduced job prospects upon release). This in turn may lead many to become hopeless about successfully completing their sentence and returning to the community afterwards. Interactions with the criminal justice system may be related to this sense of *hopelessness*. A study of 48 suicides in New York City from 1980-1988 found that 50% occurred within three days of a court appearance (Marcus, 1993). Results of a psychological autopsy study conducted on 464 jail inmates who committed suicide in the U.S. from 2005-2006 indicate that 35% occurred close to a court date, while 80% took place less than two days from a court hearing (Hayes, 2010). For those who experience high levels of hopelessness, immediate, short-term goals and sensations may become more important than long-term aspirations. Inner restraints that usually protect from self-harm may weaken. Some inmates who experience this *disinhibition* (or for many, heightened disinhibition, given that offenders often have lower levels of self-control than non-offending populations, Gottfredson & Hirschi, 1990) may think about alternatives that will end their psychological pain quickly, such as suicide, rather than considering more adaptive coping techniques.

Prior research provides support for many of the clinical risk factors included in Baumeister's (1990) escape theory of suicide in incarcerated populations. A number of researchers have theorized that incarceration in U.S. jails acts as a significant stressor that can exacerbate vulnerabilities for suicidal ideation, such as mental illness or poor coping

ability, which are overrepresented in the jail population (Bonner & Rich, 1992; Bonner, 2000; Winkler, 1992). Other clinical risk factors included in Baumeister's (1990) model that have received some preliminary support (albeit mixed support in some cases) in relation to suicidal ideation or behavior among prison samples include guilt (Dooley, 1990; Lekka et al., 2006), self-esteem (Zhang et al., 2010), depression (Ivanoff et al., 1996; Lekka et al., 2006; Sarchiapone, Carli, Di Giananntonio, & Roy, 2009; Carli, Jovanovic, Podlesek, Roy, Rihmer, Maggi, Marusic, Cesaro, Marusic, & Sarchiapone, 2010; Pereira et al., 2010; Zhang et al., 2010), anxiety (Way, Miraglia, Sawyer, Beer, & Eddy, 2005; Lekka et al., 2006), hopelessness (Ivanoff et al., 1996; Lekka et al., 2006), and impulsivity/disinhibition (Sarchiapone et al., 2009). Given this preliminary support for each of the individual clinical risk factors included in Baumeister's (1990) escape theory of suicide within incarcerated samples, the full model warrants investigation. Below, I more thoroughly review research on clinical risk factors associated with suicide, suicide attempts, and suicidal ideation in incarcerated populations. To offer a comprehensive review of this literature, those clinical risk factors included in Baumeister's (1990) theory, as well as other theories of suicide and suicide research in general, are presented.

Clinical Risk Factors for Suicidality In Incarcerated Populations

Recently, researchers and the clinical community have begun to discuss the importance of assessing dynamic, or potentially changeable, clinical risk factors for suicide among inmates. These include environmental stressors (e.g., single cell isolation), current clinical status (e.g., depression, hopelessness), and current acute symptoms (e.g.,

suicidal ideation) (Knoll & James, 2010). Many of these clinical risk factors have been established in the general population. Although they are amenable to therapeutic intervention and may hold potential to improve the prediction of suicide, only eight studies have been conducted to test them empirically with incarcerated populations. Across these eight studies, twelve clinical factors have been found to be associated with suicidal thoughts and behavior, some of which received mixed support. These include guilt, anxiety, fear, depression, hopelessness, aggression, impulsivity, and psychache, as well as low resilience, reasons for living, social support, and self-esteem. Below, each of these eight studies is reviewed.

In the first study conducted in this area, Dooley (1990) found that feelings of guilt may play an important role in suicide risk. Dooley (1990) analyzed the case notes of 295 male and female prisoners who committed suicide in England and Wales from 1972-1987 to determine the reasons that they killed themselves. Case notes included interviews with prison staff and other inmates conducted after each death, as well as the coroner's investigation and suicide notes when available. In 12.5% of the cases, feelings of guilt surrounding the offense committed, was determined to be the reason for committing suicide. Other reasons included the prison environment, outside pressures from friends or family, and psychiatric disorders. While case reviews are considered to be objective, recall bias of those interviewed may affect results and conclusions.

Way et al. (2005) used methods similar to Dooley (1990) in a study of 73 suicide victims in the New York State prison system from 1993-2001 who had contact with Mental Health services during incarceration. Mental health records were analyzed for all

cases. Psychological autopsy results were analyzed for 40 randomly chosen cases. Of the factors analyzed, anxiety/agitation and fear emerged as clinical risk factors for suicide. Seventy percent of victims had displayed noteworthy anxiety/agitation prior to their deaths, while 40% had reported feeling fear to clinicians before committing suicide. Way et al.'s (2005) study results indicate that anxiety/agitation and fear may play a role in inmate suicide. Although the use of mental health records established prior to victims' suicide may reduce recall bias, the lack of case controls may limit conclusions drawn about anxiety/agitation and suicide.

In a study conducted by Sarchiapone et al. (2009), 903 male Italian prisoners completed empirically validated measures of depression (Hamilton Rating Scale for Depression), aggression (Brown-Goodwin Lifetime History of Aggression Scale), resilience (Connor-Davidson Resilience Scale), impulsivity (Barratt Impulsiveness Scale), and suicidal ideation (Beck Scale for Suicidal Ideation). Those who reported a history of a suicide attempt ($N = 131$) had higher aggression scores, as well as more displays of aggression according to prison records, than non-attempters. Participants who attempted suicide also reported higher levels of depression and lower levels of resilience than non-attempters. Results were the same for participants who reported a history of suicidal ideation ($N = 395$), though ideators also reported higher levels of impulsivity compared to those without this history. Logistic regression analyses indicated that higher levels of depression, aggression, and aggressive behavior during incarceration were independently associated with a history of a suicide attempt. However, only depression and aggressive behavior during incarceration were independently associated with a

history of suicidal ideation. Results of this study indicate that depression, aggression, and aggressive behavior may be independently associated with a history of suicidal ideation and attempts among prisoners. They also indicate that impulsivity may be associated with a history of suicidal ideation, but not attempts. Interestingly, this latter finding contradicts that predicted by Baumeister's (1990) escape theory of suicide, in that impulsivity is hypothesized to be associated with both suicidal ideation and suicide attempts. It may reflect the fact *current* ratings of impulsivity (which may not necessarily be stable) were used to predict a *history* of suicide attempts as opposed to current or future suicidal behavior. Similarly, the results of current ratings of clinical risk factors to predict past behavior may not generalize to future suicide risk.

In a study conducted by Carli et al. (2010) with 1265 male Italian prisoners, the association between depression (Hamilton Rating Scale for Depression), aggression (Brown-Goodwin Lifetime History of Aggression Scale), impulsivity (Barratt Impulsiveness Scale), and resilience (Connor-Davidson Resilience Scale) was examined using evidence-based assessment measures. History of suicide attempts, ideation, and non-suicidal self-injury was determined in a semi-structured interview with a trained rater. Participants were classified into groups based on whether they reported a history of a suicide attempt (*N* =164), suicidal ideation (*N* =536), non-suicidal self-injury (N = 215), or no suicidality (*N* = 350). Depression, aggression, and low resilience were found to be higher in those groups with a history of suicide attempts, ideation, and non-suicidal self-injury compared to participants with no such history. Impulsivity did not differ across groups with a history of suicide attempts, ideation, and non-suicidal self-injury in this

sample. Again, this latter finding is contradictory to Baumeister's (1990) escape theory of suicide. Additionally, results predicting past suicidal thoughts and behavior may not generalize to current or future suicide risk.

Ivanoff et al. (1996) studied 130 male prisoners involved in the New York State correctional system who had engaged in parasuicidal behavior (defined as intentional self-harm or attempted suicide) either during their incarceration period ($N = 33$) or prior to incarceration ($N = 97$). This study employed empirically validated assessment instruments to assess clinical risk factors and controlled for potential confounding factors, such as social desirability (Edwards Social Desirability Scale), age, previous parasuicidal behavior, and history of psychiatric care. Depressive symptoms (Beck Depression Inventory), hopelessness (Beck Hopelessness Scale), and low reasons for living (Brief Reasons for Living Inventory) were found to be associated with higher levels of current suicidal ideation (Beck Scale for Suicidal Ideation). The authors then tested whether current suicidal ideation mediated the relationship between these clinical risk factors and parasuicidal behavior during incarceration. There was no significant direct relationship between these clinical factors and parasuicidal behavior after suicidal ideation was included in the model, indicating that this relationship is fully mediated by current suicidal ideation. The use of retrospective self-report of suicide attempts does not allow researchers to determine whether a reported suicide attempt included some intent to die. Without this information, the distinction between a history of a suicide attempt and non-suicidal self-injury cannot be determined (O'Carroll et al., 1996). When this distinction is

not made, results may lead to inaccurate conclusion about the association between the variables of interest and suicidal behavior.

Lekka et al. (2006) compared 67 Greek male prisoners who reported experiencing suicidal ideation within the prior week to 67 case control prisoners matched for age, nationality, and penal status without a history of suicidal ideation, using both cross-sectional and longitudinal study designs. Participants completed empirically validated measures of anxiety (Hamilton Rating Scale for Anxiety) and depression (Montgomery-Asberg Rating Scale for Depression), as well as a non-validated five-item questionnaire about suicidal thoughts and behaviors. Those who expressed suicidal ideation were also asked to answer questions about its precipitants using a non-validated measure created by the authors. Bivariate results indicated that participants who reported experiencing suicidal ideation in the last week scored higher on the measures of depression and anxiety than matched case controls. Further, primary reasons offered for suicidal ideation included feelings of hopelessness (20.9%) and guilt (16.4%). Participants were then followed over the course of one year. Approximately 18% of participants in the suicidal ideation group engaged in self-harm behaviors over the next year (seven engaged in non-suicidal self-injury, five made suicide attempts). No participants in the non-ideating group reported self-harm behavior. Baseline depression and anxiety scores predicted self-harm behavior over this time period. Although the use of a prospective design is a significant strength of this study, measures used to assess suicidality and inmates' subjective reasons for suicidal ideation were not empirically validated.

Zhang et al. (2010) conducted a study with 690 Chinese prisoners (female $N =$ 201) and 284 Chinese college students. Participants were classified into groups according to whether they reported the presence vs. absence of suicidal ideation in the last week on the Beck Scale for Suicidal Ideation. Seventy percent of the incarcerated sample reported experiencing suicidal ideation in the last week compared to 63.3% of the college students. Using empirically validated assessment instruments, results suggested that prisoners who endorsed suicidal ideation, relative to those who did not, reported more depressive symptoms (Chinese Depressive Symptom Scale), lower social support (Multidimensional Scale of Perceived Social Support), and lower self-esteem (Rosenberg Self-Esteem Scale). Depression was most strongly associated with the full-scale score for suicidal ideation, followed by low social support. Notable in the present study, relative to others, is the nature of the sample. The Chinese government picked the sample and no participants refused to participate. The authors note that cultural norms that dictate strict compliance with authority may account for the lack of study participation refusal. Thus, results may not generalize to other incarcerated samples. Moreover, this sample included 176 male adolescents, whereas other studies only included adults.

Using a theory-driven approach, Pereira et al. (2010) conducted a study with 73 male Canadian prisoners and 160 Canadian undergraduates (50% female) to test a psychache (i.e. intense psychological pain based in shame, guilt, humiliation, loneliness, fear, angst, dread) explanation of suicidal ideation. Results indicated that, after controlling for age, the incarcerated participants scored higher on depressive symptoms and suicidality (i.e. composite measure of history of suicide attempt and ideation and

current suicidal ideation), as measured by the empirically validated Depression, Hopelessness, and Suicide Screening Form, than college participants. The authors found that psychache (i.e. intense psychological pain), which was measured using the psychometrically sound Psychache Scale, predicted suicidality above and beyond depression and hopelessness for both the offender and undergraduate samples. Results also held for both genders among undergraduates. These results suggest that while depressive symptoms may be associated with suicidal ideation in an incarcerated population, other constructs related to negative emotions may be even more important in explaining suicidal ideation. The use of a measure of suicidality that includes history of such thoughts and behavior as well as current thoughts may affect conclusions that can be drawn about current and future suicide risk.

In summary, eight studies have examined clinical risk factors for suicidality in incarcerated populations. Two of the studies assessed risk for completed suicide and found that guilt (Dooley, 1990), anxiety, and fear (Way et al., 2005) played a role in the suicides of prisoners in the U.S., England, and Wales. Two studies examined clinical factors associated with a history of suicide attempts among inmates. Both studies indicated that a suicide attempt history was associated with higher aggression, more displays of aggression according to prison records, higher levels of depression, and lower levels of resilience (Sarchiapone et al., 2009; Carli et al., 2010). They also failed to find an association between impulsivity and a suicide attempt history. One study found that the relationship between clinical factors, such as depression, hopelessness, and few

reasons for living, and parasuicidal behavior, was fully mediated by suicidal ideation (Ivanoff et al., 1996).

Finally, four studies examined clinical risk factors for current suicidal ideation among inmates. Three out of four studies found that depression was associated with current suicidal ideation (Ivanoff et al., 1996; Lekka et al., 2006; Zhang et al., 2010). Two out of three studies indicated that hopelessness was associated with current suicidal ideation (Ivanoff et al., 1996; Lekka et al., 2006). However, results of one study indicated that psychache predicted current suicidal ideation above and beyond depression and hopelessness (Pereira et al., 2010). Low reasons for living (Ivanoff et al., 1996) anxiety (Lekka et al., 2006), guilt (Lekka et al., 2006), low social support (Zhang et al., 2010), and low self-esteem (Zhang et al., 2010) also received support as clinical risk factors for current suicidal ideation in a single study. Additionally, impulsivity was associated with a history of suicidal ideation in only one (Sarchiapone et al., 2009) out of two (Carli et al., 2010) studies. Though these studies provide important preliminary data for the association between clinical risk factors and suicidality in incarcerated samples, many of which are included in Baumeister's (1990) escape theory of suicide, they are subject to methodological limitations, which limit conclusions that can be drawn.

Limitations of Research on Clinical Risk Factors for Suicidality

Each of the eight aforementioned studies has methodological limitations that should be taken into consideration when interpreting study results. Below, general methodological limitations are reviewed, including use of retrospective chart review, retrospective reports of suicide attempts, lack of assessment for suicidal intent,

predominant use of cross-sectional research designs, use of non-empirically validated assessment instruments, lack of attention to theory, and lack of consideration of other well-validated risk factors (e.g., history of mental illness and suicide attempts). Also of concern is the lack of attention to issues of diversity in this literature, including setting (prison versus jails), gender, race, and age, which is also discussed below.

General Methodological Limitations

Of the eight studies reviewed above, two relied on institutional records of completed suicides (Dooley, 1990; Way et al., 2005). Although retrospective chart reviews are considered to be objective, they may produce less reliable data on clinical factors associated with suicide than studies using evidence-based measures or clinical interviews with actual study participants. Subjective decision-making by both the mental health professionals who record the data in the chart and the researchers who extract the data from the charts is relied upon (Hess, 2004). In both studies reviewed above, conclusions about correlates and reasons for suicide listed in victims' charts were subjectively determined and recorded by researchers. Moreover, neither study implemented case controls to examine potential differences in hypothesized correlates of suicide between those who did and did not commit suicide.

Of the remaining six studies, three relied on retrospective self-reports of suicide attempts (Ivanoff et al., 1996; Sarchiapone et al., 2009; Carli et al., 2010). This is most problematic given that the correlates of suicide attempts were assessed well after the suicide attempts occurred. Current levels of independent variables may not accurately reflect those present at the time of the suicide attempt. Indeed, elevated levels of clinical

risk factors may even be associated with the "effects" of past suicide attempts. Retrospective self-report of suicide attempts can also be subject to social desirability and recall bias. Further, many of the researchers failed to assess whether a reported suicide attempt included some intent to die. Without this information, the distinction between a history of a suicide attempt and non-suicidal self-injury cannot be determined (O'Carroll et al., 1996). When this distinction is not made, as was the case in studies conducted by Ivanoff et al. (1996) and Lekka et al. (2006), results may lead to inaccurate conclusion about the association between the variables of interest and suicidal behavior. Additionally, five of these six studies employed a cross-sectional research design (Sarchiapone et al., 2009; Carli et al., 2010; Ivanoff et al., 1996; Zhang et al., 2010; Pereira et al., 2010), precluding the determination of temporal relationships for all variables under study. Only one study to date used a prospective research design (Lekka et al., 2006) in an attempt to examine clinical risk factors for future suicidal behavior during the incarceration period. However, this study used measures to assess suicidality and inmates' subjective reasons for suicidal ideation that were not empirically validated. Finally, only one study was designed to test a leading theory of suicide (Pereira, 2010).

Also of concern is that very few studies examining current clinical risk factors for suicidality considered the role of a history of mental illness or treatment (e.g., psychiatric diagnosis and suicide attempts), which could affect study results. Out of the eight reviewed studies, only one included a history of a psychiatric diagnosis in study analyses (Ivanoff et al., 1996). Yet research suggests that a history of psychiatric disorders, such as substance abuse, depression, and psychosis, represent important risk factors for suicide

during incarceration. Hayes' (2010) psychological autopsy study of 464 jail suicide victims from 2005-2006 found that 47% reported a history of substance abuse at intake. However, 35% of the suicide cases studied had no data available on substance abuse history, so this rate could be much higher. Hayes (2010) also found that 38.1% of jail suicide victims from 2005-2006 had a history of mental illness. Depression and psychosis were the most common diagnoses among victims. However, no data on mental illness was available for 30% of the cases reviewed. In a relatively recent review, Fazel et al. (2008) also concluded that a history of a psychiatric diagnosis is a significant risk factor for suicide during incarceration in studies implementing case controls.

The prevalence of a psychiatric disorder history is also elevated among suicide attempters and ideators in incarcerated populations. Goss et al. (2002) found that 77% of 124 inmates who made a first suicide attempt between from 1996-1999 reported a history of a chronic psychiatric problem, compared with only 15% of the general jail population. In this sample, however, presence of a history of a psychiatric disorder relied on self-report and not on official records or diagnosis. Several studies have also shown a bivariate relationship between presence of a psychiatric disorder and suicidal ideation among incarcerated samples in the U.S., Greece, and Italy (Ivanoff et al., 1996; Lekka et al., 2006; Sarchiapone et al., 2009). However, only two out of three studies used structured diagnostic interviews to establish psychiatric diagnoses (Ivanoff et al., 1996; Sarchiapone et al., 2009). The third study relied on official records of past psychiatric hospitalizations, which may underrepresent the prevalence of psychiatric disorders in this sample, given that this is a significantly underserved population (Lekka et al., 2006).

Though subject to methodological limitations, these results indicate that a history of

psychiatric disorders (and by association access to treatment), which exist in jails and

prisons at much higher rates than in the general population, may play an important role in

risk for suicidal thoughts and behaviors.

Similar to psychiatric disorders, only one of the reviewed eight studies included a

history of a suicide attempt in study analyses. Yet a suicide attempt history is one of the

stronger predictors of suicide completion in incarcerated populations (Fruehwald et al.,

2004). Hayes (2010) found that 33.8% of the 464 suicide victims in U.S. jails from 2005-

2006 reported a history of suicidal behavior. Twenty-four percent had no data available

data on suicide history, thus this prevalence rate may actually be higher. Goss et al.

(2002) concluded that 41% of inmates who attempted suicide from 1996-1999 in two

Washington state jails had a history of a suicide attempt. In studies that employed case

control designs, Fazel et al. (2008) found that a history of a suicide attempt increased

suicide risk eightfold in prisons worldwide. Just as in the general non-incarcerated

population, research suggests that a history of a suicide attempt is an important risk factor

for suicidal behavior during incarceration. Thus, consideration should be given to the role

of psychiatric illness/access to treatment and suicide attempt history in suicide research

with incarcerated samples.

Lack of Attention to Diversity
Also important to note is the lack of attention to diversity across these eight

studies, both with regard to setting (prisons versus jails) and demographic variables

(gender, race, and age). All of the eight reviewed studies were conducted in prisons, only

two of which were in the United States. It cannot be assumed that the same results would be achieved in jails, given inherent differences in jails versus prisons (e.g., length of stay, prevalence of psychiatric illness, presence of pre- and post-sentence inmates, access to programs). Additionally, the distinction between jails and prisons is not as clear outside of the U.S. Thus, additional research in these settings in the U.S. could further clarify whether risk factors for SI vary across jails and prisons. Indeed, the prevalence of suicide completions remains higher in U.S. jails than in prisons (Mumola, 2005), suggesting that an examination of potential differences in risk factors across settings may be worthwhile.

Gender and Suicide

With regard to demographics, only four of the eight reviewed studies included women in their samples (Dooley, 1990; Way et al., 2005; Zhang et al., 2010; Pereira et al., 2010), which likely reflects the disproportion of males to females in incarcerated samples (90% male). Thus, it is not surprising that the majority of suicide victims in U.S. jails are males, representing 94% of jail suicides that occurred in 1986 (Hayes, 1989), 92% of those in 2005 (Mumola & Noonan, 2008), and 93% of those committed from 2005-2006 (Hayes, 2010). However, in an examination of studies that employed case controls, Fazel et al. (2008) concurred that being male increases risk for completed suicide during incarceration in prisons worldwide.

Interestingly, the opposite results are found when examining suicide attempts as opposed to completed suicides within incarcerated populations. In a study of 132 suicide attempts made by 124 inmates in Washington state jails from 1996-1996, Goss et al. (2002) found that women made up a disproportionately high percentage of the sample

compared with the general jail population (18% vs. 12%). Further, in a study of 1,418 female arrestees awaiting trial in Chicago from 1991-1993, Charles (2003) found that the prevalence of suicidal ideation and behavior among incarcerated women was much higher than that of non-incarcerated women in the general population (53.4% vs. 4.8-15%). However, it should be noted that this study employed a lifetime measure of suicidal thoughts and behavior, which spanned well beyond the incarceration period.

Taken together, results of these studies mirror those found in non-incarcerated adults samples, namely that males complete suicide at higher rates than females, whereas females attempt suicide at higher rates than males (Moscicki, 1994; Schwab, Warheit, & Holzer, 1972; Zhang et al., 2005). In non-incarcerated samples, gender differences in completed suicide have been hypothesized to arise from the fact that males tend to use more lethal methods in their suicide attempts (Canetto & Sakinofsky, 1998; Denning, Conwell, King, & Cox, 2000). This question has not been examined in incarcerated populations. Indeed, relative to examinations of differences in prevalence rates, much less research has been conducted to examine whether the clinical processes that underlie suicidal behavior during incarceration vary for males and females. One study examining patterns of suicidal ideation in a sample of 514 Chinese prisoners (201 women) found that men and women did not differ on levels of suicidal ideation, but did display distinctly different patterns of associated risk factors (such as smoking, drinking, residence prior to incarceration, peer criminality, sentence length) (Zhang, Liang, Zhou, & Brame, 2010). For example, drinking was associated with lower suicidal ideation among males, but higher suicidal ideation among females. Given the dearth of research

on gender differences in suicidality during incarceration, particularly the potential

processes underlying any differences, future research in this area is warranted.

Race and Suicide

Studies that have employed chart reviews of institutional records of completed

suicides find that white jail inmates commit suicide at higher rates than black or Hispanic

inmates in U.S. jails. Specifically, white inmates represented 72% of jail suicides that

occurred in 1986 (Hayes, 1989), 70% of those in 2005 (Mumola & Noonan, 2008), and

67% of those committed from 2005-2006 (Hayes, 2010). Yet, white inmates constitute

only 44% of the total jail population across the U.S., and thus appear to be over-

represented in rates of reported suicide. In contrast, black inmates represent 39% of the

U.S. jail population, yet the most recent survey of U.S. jail suicides found that only

15.1% of victims were black (Hayes, 2010). Mumola (2005) studied 918 jail suicides

nationwide from 2000-2002 and concluded (in the absence of case controls) that white

inmates were six times more likely to commit suicide than black inmates. Taken together,

results indicate that a disproportionately high percentage of suicide victims in U.S. jails

are white, while a disproportionately low percentage of inmates are black.

Fazel et al. (2008) reviewed studies that employed a case control design to

examine race differences in completed suicide across prisons worldwide and found that

being white was positively associated with suicide, while being black was inversely

associated with suicide. Interestingly, only one study examined race or ethnicity

differences in clinical risk factors for suicidality during incarceration and failed to find

any significant differences across groups (Ivanoff et al., 1996). No other studies to date

have examined racial differences in suicide attempts or suicidal ideation among inmates in jails or prisons. Further examination of racial differences in suicidality, as well as potential underlying mechanisms, is warranted to shed light on the disproportionate rates of suicidality that exist in racial groups during incarceration.

Age and Suicide

Only two out of the reviewed studies considered the role of age as a risk factor for suicidality (Ivanoff et al., 1996; Pereira et al., 2010). Research on the average age of suicide victims in U.S. jails has consistently indicated that inmates in their 30s are most at risk. Kennedy (1984) concluded that inmates ages 30-34 were slightly overrepresented in the 39 suicides that occurred in a Michigan jail from 1980-1981. The average age of the 339 jail suicide deaths that occurred nationwide in 1986 was 30 (Hayes, 1989). Mumola and Noonan (2008) concluded that inmates who were 25-44 years old committed most of the 277 U.S. jail suicides in 2005. Most recently, Hayes (2010) found that the average age of the 464 jail suicide victims from 2005-2006 was 35, with 36% of victims ranging in age from 33-42. Goss et al. (2002) found that the average age of suicide attempters in a study of 132 first suicide attempts in Washington State from 1996-1999 was similar, at 31.5 years old. Ivanoff et al. (1996) found that age correlated negatively with a history of a suicide attempt during incarceration in a sample of 130 male prisoners in the New York State prison system. The majority of study participants with this history were in their 30s. Although results indicate that inmates in their 30s are most likely to engage in suicidal behavior during incarceration, this age range is also

overrepresented in U.S. jails and prisons, where the majority of inmates are in their 30s (Hayes, 2010). Therefore, these study results are not necessarily surprising.

Studies that implement case control designs have produced mixed results regarding whether age plays a role in suicidality during incarceration. Way et al. (2005) found that the age of 76 suicide victims in the New York State prison system was significantly younger than that of the total prison population (mean age = 32.8). However, Fazel et al. (2008) concluded that age was not a risk factor for completed suicide in a review of 34 studies that included case controls in prisons worldwide. These results are inconsistent with findings in the general population, which indicate that older adults (e.g., those over 65) are at heightened risk for suicide relative to younger adults (Waern, Rubenowitz, & Wilhemson, 2003). No studies to date have examined age differences in suicidal ideation among offenders, which is a potentially important area of study. Given the general dearth of research on potential age differences in suicidality in incarcerated populations and mixed findings to date, further research in this area is warranted. If differences exist, exploration of potential mechanisms may also be necessary.

In conclusion, research suggests that setting, race, gender, and age, as well as history of a psychiatric disorder and suicide attempt, may play an important role in suicide risk during incarceration, and thus should be attended to in suicide research with this population. However, these results should be considered preliminary, given that several methodological limitations apply to this research. Specifically, most of these studies employ retrospective self-reports of suicide attempts and psychiatric disorders

among inmates, which are often not precise (Goss et al., 2002; Lekka et al, 2006; Fazel, 2008). Additionally, those studies employing psychological autopsy methods must rely on records that may be incomplete, include subjective information from mental health professionals, and/or fail to include diagnoses determined by structured diagnostic interviews (Hayes, 2010). Further, all studies in this area employed cross-sectional and retrospective designs. Despite these limitations, the role that these factors potentially play in research on suicidality in incarcerated populations should be considered. Of particular importance will be to examine these factors in the context of theoretically informed models of suicide, such as Baumeister's escape theory of suicide, to determine whether group differences exist. Below research that has examined Baumeister's escape theory of suicide is reviewed.

Prior Tests of the Escape Theory of Suicide

Researchers have drawn on escape theory to help explain maladaptive behaviors such as disordered eating and binge drinking (Heatherton & Baumeister, 1991), as well as suicidal ideation in college students (Chatard & Selimbegovic, 2010; Schaefer, Esposito-Smythers, & Riskind, (2012). However, Baumeister's (1990) full escape model of suicide has only been tested empirically in three samples. In the first study, 168 college students (116 females) completed evidence-based self-report measures of negative life stress, perfectionism, depression, anxiety, hopelessness, reasons for living, and suicidal behavior at one time point (Dean & Range, 1996). A path analysis provided only partial validation for the model and accounted for 26% of the variance in suicide attempts. Specifically, significant paths were found from negative life stress to perfectionism, perfectionism to

anxiety and depression, anxiety and depression to hopelessness, and from reasons for living to suicidal behaviors. The path from hopelessness to reasons for living was not tested. However, participants endorsed low levels of suicidal behavior ($M = 2.49$, $SD = 2.74$ on a scale from 0 to 16) positively skewing the sample (percentage of sample that engaged in suicidal behavior was not reported). Additionally, the authors included perfectionism in the model to serve as a proxy for (aversive) self-awareness and failed to assess for associated feelings of self-blame (e.g. shame and guilt). Moreover, they chose to include a measure of reasons for living, which seems to expand upon hopelessness, in the second to last step of the model rather than including a measure of disinhibition. Reasons for living were the only significant predictor of suicidal behavior.

In a second cross-sectional study, Dean, Range, and Goggin (1996) revised their model to measure suicidal ideation instead of behaviors in a sample of 114 undergraduates (94 women). The authors also included an evidence-based measure of other-oriented perfection, in addition to the original measure of self-oriented perfectionism. All paths were significant in the revised model, which demonstrated strong goodness of fit. Namely, the model showed significant unidirectional paths from negative life stress to other-oriented perfection, other-oriented perfection to anxiety and depression, anxiety and depression to hopelessness, hopelessness to reasons for living, and from reasons for living to suicidal ideation. Results indicate that Baumeister's causal chain of events leading to suicidal ideation, as measured by Dean et al. (1996), received support in a college sample. However, this sample also endorsed low levels of suicidal ideation $(M = 2.31$, $SD = 6.57$ on a scale from 0 to 57), which could affect the strength

and direction of relationships among variables of interest, as well as generalizability of results to populations with higher levels of suicidal ideation, such as clinical or incarcerated samples.

In a third cross-sectional study, Dean and Range (1999) tested their revised model (excluding anxiety) of suicidal ideation in a clinical sample of 132 outpatients (94 women). The authors also substituted a measure of negative life events for the measure of negative life stress used in prior studies (Dean & Range, 1996; Dean, Range, & Goggin, 1999). Significant paths were found from other-oriented perfectionism to depression, depression to hopelessness, hopelessness to reasons for living, and reasons for living to suicidal ideation. Unexpectedly, negative life events did not play a significant role in the model. Even so, the model demonstrated strong goodness of fit, providing partial support for their conceptualization of Baumeister's linear model of suicidal ideation. Also notable, results indicated that measurement of negative life stress (Dean & Range, 1996; Dean, Range, & Goggin, 1996) as opposed to negative life events (Dean & Range, 1999) may produce different results, as only the studies measuring negative life stress achieved significance for the first step.

All three modified tests (Dean & Range, 1996; Dean, Range, & Goggin, 1996; Dean & Range, 1999) of Baumeister's (1990) escape theory of suicide provided partial support for his model. They also indicate that some stages or risk factors may be more important than others in some populations, such as negative life stress and anxiety in college samples vs. clinical samples. However, these studies are also subject to a number of methodological limitations, including the sole use of a cross-sectional research design,

inclusion of non-diverse (primarily college-age white females) samples which limit generalizability, lack of attention to other well validated risk factors, and use of measures that deviate from Baumeister's original model. A rigorous test of the escape theory of suicide is needed that employs a longitudinal research design and attends to potentially important group differences. This test should examine a diverse sample with a range of suicidal ideation, employ measures that better capture Baumeister's (1990) proposed constructs, and attend to the potentially different roles of shame vs. guilt and anxiety vs. depression. With regard to the latter point, Baumeister's model posits that each of these constructs is equally important. However, research suggests that shame and guilt may function differentially in all populations (e.g., Tangney et al., 2011).

In summary, suicide is a significant problem in jails and prisons worldwide, particularly in the U.S. where jail suicide rates are nine times higher than in the general population (Daniel, 2006). Though not studied in relation to SI, the associations between socio-demographic variables and suicidal behavior in jails have been examined. White inmates commit suicide at higher rates than black or Hispanic inmates in U.S. jails (Hayes, 1989; Charles, 2003; Mumola, 2005; Mumola & Noonan, 2008), with rates three to six times higher among whites (Mumola, 2005). Most recently, Hayes (2010) found that 67% of jail suicide victims were white, 15.1% were black, and 12.7% Hispanic. Suicide victims in U.S. jails are disproportionately males (93%) (Hayes, 2010), but women attempt at higher rates than males (Goss et al., 2002; Charles et al., 2003). The average age of suicide victims in U.S. jails is in the 30s (Kennedy, 1984; Hayes, 1989; Goss et al., 2002; Mumola & Noonan, 2008), which mirrors the general jail population.

Another important correlate of suicide in incarcerated populations is mental health history, including psychiatric disorders and prior suicide attempts. Hayes (2010) found that 38.1% of jail suicide victims reported a history of mental illness at intake, compared with 64% of the general jail population and 90% of suicide victims in the community. Goss et al. (2002) found that 77% of inmates who made a suicide attempt reported a history of a chronic psychiatric problem, compared with 15% of the general jail population. Though not yet examined in a U.S. jail sample, studies also show a relationship between psychiatric disorders and SI in prison samples (Ivanoff et al., 1996; Lekka et al., 2006; Sarchiapone et al., 2009). Also notable is that a suicide attempt history has been reported among 34% of those who complete (Hayes, 2010) and 41% of those who attempt suicide in U.S. jails (Goss et al., 2002). Jail inmates with a history of a suicide attempt may be more likely to think about suicide than those without this history. Cumulatively, research indicates that white race, young adulthood (30s), psychiatric diagnoses, and previous suicide attempts are associated with suicidal behavior in jails. Moreover, females attempt but do not complete suicide at higher rates than males.

Most research on suicidal thoughts and behavior in incarcerated populations to date has focused on demographic correlates. Few studies have examined clinical correlates/predictors of suicidal thoughts and behaviors or integrated leading theories of suicide into research. A review of leading theories of suicide indicates that motivational (e.g., Durkheim, 1897), cognitive (e.g. Beck et al., 1985), psychological (e.g., Schneidman, 1993), and interpersonal (e.g., Joiner, 2005) explanations have dominated the field for the last century. Baumeister's (1990) escape theory of suicide integrates and

builds upon these theories. It may apply particularly well to the development of suicide in incarcerated populations, given its emphasis on the role of negative life stress and resultant clinical symptomatology commonly reported by inmates. Indeed, many of the clinical risk factors included in Baumeister's escape theory of suicide have been associated with suicide, suicide attempts, and/or suicidal ideation in incarcerated populations, including feelings of guilt (Dooley, 1990; Lekka et al., 2006), self-esteem (Zhang et al., 2010), depression (Ivanoff et al., 1996; Lekka et al., 2006; Sarchiapone et al, 2009; Carli et al., 2010; Pereira et al., 2010; Zhang et al., 2010), anxiety (Way et al., 2005; Lekka et al., 2006), and hopelessness (Ivanoff et al., 1996; Lekka et al., 2006), though results were mixed for impulsivity/disinhibition (Carli et al., 2010; Sarchiapone et al., 2009). Further, preliminary research designed to test a modified version of Baumeister's (1990) escape theory of suicide provides partial support for this model in college and clinical samples (Dean & Range, 1996; Dean, Range, & Goggin, 1996; Dean & Range, 1999). Thus, tests of Baumeister's escape model of suicide with inmates hold the potential to improve our understanding of suicidality in U.S. jails and prisons.

Though prior research yields preliminary support for the various clinical components and/or stages included in Baumeister's escape theory of suicide, it is subject to numerous methodological limitations as discussed above. Generally, these limitations include the use of retrospective and cross-sectional research designs, reliance on incomplete institutional records for information, and poor measurement of suicidal behavior (i.e., self-report vs. use of institutional records and lack of attention to suicidal intent). Other limitations include inconsistent use of empirically validated assessment

measures, lack of integration of theory, failure to consider potential confounding factors (e.g., history of psychiatric illness or a suicide attempt) in study analyses, and little attention to diversity or individual differences (i.e., gender, race, age). Research that examines theoretically driven models of suicidality, such as Baumeister's escape theory of suicide, in an incarcerated population, using a measure of suicidality that captures the incarceration period, with attention to subgroup differences is needed to improve our understanding of suicidality during incarceration. Such information could be used to inform suicide risk assessment, prevention, and intervention programs with incarcerated populations.

Although the exploratory model (Figure 2) provided excellent fit to the data, paths from depression to SI and from hope to SI were non-significant, which is inconsistent with Baumeister's escape theory of suicide. When these paths were removed from the model, model fit was significantly worse and provided poor fit to the data.
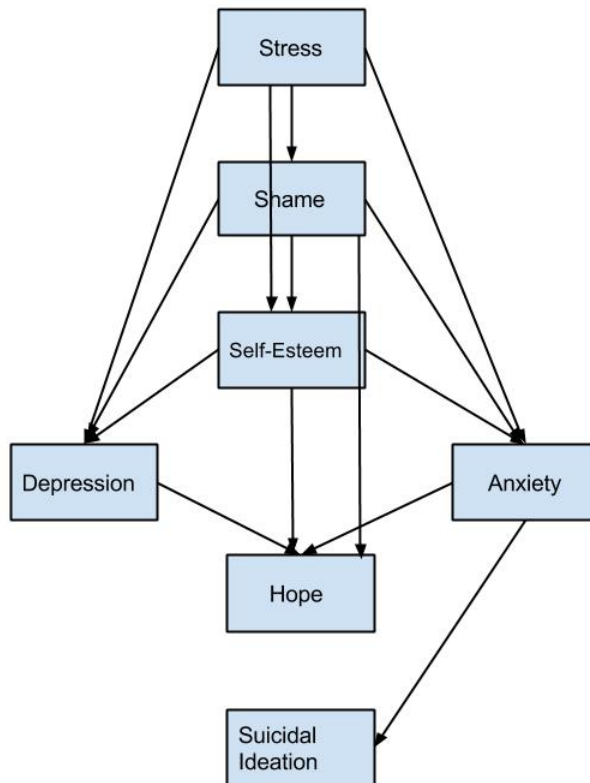

Figure 11: Model trimming

REFERENCES

Arbuckle J., 1995. *AMOS: Analysis of moment structures user's guide.* Small Waters, Chicago.

Baumeister, R.F. (1990). Suicide as escape from self. *Psychological Review, 97*, 90-113.

Beck, A.T., Brown, G.K., Steer, R.A., Dahlsgaard, K.K., Grisham, J.R., (1999). Suicide ideation at its worst point: A predictor of eventual suicide in psychiatric outpatients. *Suicide and Life-Threatening Behaviors, 29*, 1-9.

Beck, A.T., Steer, R., Kovacs, M., & Garrison, B. (1985). Hopelessness and eventual suicide: A 10-year prospective study of patients hospitalized with suicidal ideation. *American Journal of Psychiatry, 142*, 559-563.

Bonner, R. (2000). Correctional suicide prevention in the year 2000 and beyond. *Suicide and Life-Threatening Behavior, 30*(4), 370-376.

Bonner, R.L. & Rich, A.R. (1992). Psychosocial vulnerability, life stress, and suicide ideation in a jail population: A cross-validation study. *Suicide and Life-Threatening Behavior, 20*(3), 213-224.

Borges, G., Angst, J., Nock, M.K., Ruscio, A.M., Kessler, R.C. (2008). Risk factors for the incidence and persistence of suicide-related outcomes: A 10-year follow-up study using the National Comorbidity Surveys. *Journal of Affective Disorders, 105,* 25-33.

Breault, K. (1986). Suicide in America: A test of Durkheim's theory of religious and family integration, 1933-1980. *American Journal of Sociology, 92*(3), 628-656. Brown, G.K., Beck, A.T., Steer, R.A., Grisham, J.R, (2000). Risk factors for suicide in psychiatric outpatients: A 20-year prospective study. *Journal of Consulting and Clinical Psychology, 68*, 371-377.

Canetto, S.S., & Sakinofsky, I. (1998). The gender paradox in suicide. *Suicide and Life-Threatening Behavior, 28*(1), 1-23.

Carli, V., Jovanovic, N., Podlesek, A., Roy, A., Rihmer, Z., Maggi, S., Marusic, D.

Cesaro, C., Marusic, A., & Sarchiapone, M. (2010). The role of impulsivity in self-mutilators, suicide ideators and suicide attempters—A study of 1265 male incarcerated individuals. *Journal of Affective Disorders, 123*(1-3), 116-122.

Charles, D.R., Abram, K.M., McClelland, G.M., & Teplin, L.A. (2003). Suicidal ideation and behavior among women in jail. *Journal of Contemporary Criminal Justice, 19*(1), 65-81.

Chatard, A., & Selimbegovic, L. (2011). When self-destructive thoughts flash through the mind: Failure to meet standards affects the accessibility of suicide-related thoughts. *Journal of Personality and Social Psychology, 100*(4), 587-605.

Daniel, A.E., & Fleming, J. (2006). Suicides in a state correctional system, 1992-2002: A review. Journal of Correctional Health Care, *12*(1), 24-35.

Dean, P., Range, L., & Goggin, W. (1996). The escape theory of suicide in college students: Testing a model that includes perfectionism. *Suicide & Life-Threatening Behavior, 26*, 181-186.

Dean, P. & Range, L. (1999). Testing the escape theory of suicide in an outpatient clinical population. *Cognitive Therapy and Research, 23*(6), 561-572.

Dean, P. J., & Range, L. M. (1996). The escape theory of suicide and perfectionism in college students. *Death Studies, 20*, 415-424.

Denning, D.G., Conwell, Y., King, D., & Cox, C. (2000). Method choice, intent, and gender differences in completed suicide. *Suicide and Life-Threatening Behavior, 30*(3), 282-288.

Dooley, E. (1990). Prison suicides in England and Wales 1972-87. *British Journal of Psychiatry, 156*, 40-45.

Durkheim, E. (1897). *Le Suicide: Etude de sociologie*. Paris: F. Alcan.

Edens, J.F. & Ruiz, M.A. (2005). *Personality Assessment Inventory Interpretive Report for Correctional Settings (PAI-CS) Professional Manual*. Odessa, FL: Psychological Assessment Resources.

Eyland, S., Corben, S., & Barton, J. (1997). Suicide prevention in New South Wales correctional centres. *Crisis: The Journal of Crisis Intervention and Suicide Prevention, 18*(4), 163-169.

Fazel, S., Cartwright, J., Norman-Nott, A., & Hawton, K. (2008). Suicide in prisoners: A

systematic review of risk factors. *Journal of Clinical Psychiatry, 69*(11), 1721-1731.

Field, A. (2009). Discovering Statistics Using SPSS, 3rd edition. Thousand Oaks, CA: Sage Publications Inc.

Fleming, J.S., & Courtney, B.E. (1984). The dimensionality of self-esteem: Hierarchical facet model for revised measurement scales. *Journal of Personality and Social Psychology, 46*, 404-421.

Francis, L.J., & Wilcox, C. (1995). Self-esteem: Coopersmith and Rosenberg compared. *Psychological Reports, 76*, 1050.

Fruehwald, S., Matsching, T., Koenig, F., Bauer, P., & Frottier, P. (2004). Suicide in custody: Case-control study. *British Journal of Psychiatry*, *185*, 494-498.

Goss, J.R., Peterson, K., Smith, L.W., Kalb, K., & Brodey, B.B. (2002). Characteristics of suicide attempts in a large urban jail system with an established suicide prevention program. *Psychiatric Services, 55*(5), 574-579.

Gottfredson, M.R. & Hirschi, T. (1990). *A General Theory of Crime*. Stanford, CA: Stanford University Press.

Gray-Little, B., Williams, V.S.L., & Hancock, T.D. (1997). An item response theory analysis of the Rosenberg self-esteem scale. Personality and Social Psychology Bulletin, 23(5), 443-451.

Hanson, R. K., & Tangney, J. P. (1996). The Test of Self-Conscious Affect–Socially Deviant Populations (TOSCA-SD). Ottawa: Corrections Research, Department of the Solicitor General of Canada.

Hart, S. D., Cox, D. N., & Hare, R. D. (1995). *The Hare Psychopathy Checklist: Screening Version*. Toronto: Multi-Health Systems.

Hastings, M.E., Northman, L.M., & Tangney, J.P. (2000). Shame, guilt, and suicide. In T.E. Joiner & M.D. Rudd (Eds.). *Suicide Science: Expanding the Boundaries* (pp. 67-79). Norwell, MA: Kluwer.

Haycock, J. (1991). Capital crimes: Suicides in jail. *Death Studies, 15*, 417-433.

Hayes, L., (1989). National study of jail suicides: Seven years later. *Psychiatric Quarterly, 60*, 7-29.

Hayes, L. National Institute of Corrections, (2010). *National study of jail suicide: 20*

years later (024308). Retrieved from U.S. Department of Justice website: http://prevention.mt.gov/suicideprevention/SuicideStudy-20YearsLater.pdf

Hayes, L. (2005). Suicide prevention in correctional facilities. In C. Scott and J. Gerbasi (eds.) Handbook of Correctional Mental Health. Washington, DC: APA.

Heatherton, T.F., & Baumeister, R. (1991). Binge eating as an escape from self-awareness. *Psychological Bulletin, 110*, 86-108.

He, X., Felthous, A.R., Holzer, C.E., Nathan, P., & Veasey, S. (2001). Factors in prison suicide: one year study in Texas. *Jail Suicide/Mental Health Update, 10*(4), 1-7.

Hess, D.R. (2004). Retrospective studies and chart reviews. *Respiratory Care, 49*(10),1171–1174.

Ivanoff, A., Jang, S.J., & Smyth, N.J. (1996). Clinical risk factors associated with parasuicide in prisons. *International Journal of Offender Therapy and Comparative Criminology, 40*(2), 135-146.

Joiner, T.E. (2005). *Why people die by suicide*. Cambridge, MA: Harvard University Press.

Kachur, S.P, Potter, L.B, James, S.P., Powell, K.E. (1995). Suicide in the United States 1980-1992 Violence Surveillance Summary Series No.1., Centers for Disease Control and Prevention, Atlanta, GA.

Kennedy, D.B. (1984). A theory of suicide while in police custody. *Journal of Police Science & Administration, 12*(2), 191-200.

Kline, R.B. (2011). *Principles and practice of structural equation modeling, third edition*. New York: The Guilford Press.

Knoll, I.V., & James, L. (2010). Suicide in correctional settings: Assessment, prevention, and professional liability. *Journal of Correctional Health Care, 16*(3), 188-204.

Lekka, N.P., Argyriou, A.A., & Beratis, S. (2006). Suicidal ideation in prisoners: Risk factors and relevance to suicidal behavior: A prospective case-control study. *European Archives of Psychiatry and Clinical Neuroscience, 256*(2), 87-92.

Lewinsohn, P. M., Rohde, P., Seeley, J. R.,1996. Adolescent suicidal ideation and attempts: Prevalence, risk factors, and clinical implications. *Clinical Psychology-Science and P*ractice, *3,* 25–46.

Marcus, P., & Alcabes, P. (1993). Characteristics of suicides by inmates in an urban jail. *Hospital & Community Psychiatry, 44*(3), 256-261.

Metzner, J. (2002). Class action litigation in correctional society. *Journal of the American Academy of Psychiatry and the Law*, *30*, 19-29.

Morey, L. C. (1991). *The Personality Assessment Inventory Professional Manual*. Odessa, FL: Psychological Assessment Resources.

Morey, L.C. (2003). *Essentials of PAI Assessment*. New York: John Wiley.

Moscicki, E.K. (1994). Gender differences in completed and attempted suicides. *Annals of Epidemiology*, *4*(2), 152-158.

Mumola, C., & Noonan, M. (2008). Deaths in custody statistical tables. Washington, DC. U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics.

Mumola, C. (2005). Suicide and homicide in state prisons and local jails. Special Report. Washington, DC. U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics.

Muris, P., Meesters, C., Bouwman, L., & Notermans, S. (2014). Relations among behavior inhibition, shame- and guilt-proneness, and anxiety disorder symptoms in non-clinical children. *Child Psychiatry and Human Development*, No Pagination Specified.

O'Carroll, P., Berman, A., Maris, R., & Moscicki, E. (1996). Beyond the tower of Babel: A nomenclature for suicidology. *Suicide and Life-Threatening Behavior*, *26*(3), 237-252.

Oktedalen, T., Hagtvet, K.A., Hoffart, A., Langkass, T.F., & Smucker, M. (2014). The trauma related shame inventory: Measuring trauma-related shame among patients with ptsd, Journal of Psychopathology and Behavioral Assessment, No Pagination Specified..

Pereira, E.J., Kroner, D.G., Holden, R.R., & Flamenbaum, R. (2010). Testing Shneidman's model of suicidality in incarcerated offenders and in undergraduates. *Personality and Individual Differences, 49*(8), 912-917.

Peterson & Seligman. (2004). *Character strengths and virtues: a handbook and classification.* Washington, DC: APA Press.

Rosenberg, M. (1965). Society and the adolescent self-image. Princeton, NJ: Princeton University Press.

Sarchiapone, M., Carli, V., Di Giananntonio, M., & Roy, A. (2009). Risk factors for attempting suicide in prisons. *Suicide and Life-Threatening Behavior, 39*(3), 343-350.

Schwab, J.J., Warheit, G.J., Holzer, C.E. (1972). Suicide ideation and behavior in a general population. *Diseases of the Nervous System*, *33,* 745-748.

Schaefer, K.E., Esposito-Smythers, C., & Riskind, J. (2012). The role of impulsivity in the relationship between anxiety and suicidal ideation. *Journal of Affective Disorders*.

Shneidman, E. S. (1993). Suicide as psychache. *Journal of Nervous and Mental Disease,* 181, 145–147.

Sloane, B.C. (1973). Suicide attempts in the District of Columbia prison system. Omega: Journal of Death and Dying, 4(1), 37-50.

Tangney, J.P., Stuewig, J., Mashek, D., & Hastings, M. (2011). Assessing jail inmates' proneness to shame and guilt: Feeling bad about the behavior or the self? Criminal Justice and Behavior, 38(7), 710-734.

Tangney, J.P., Stuewig, J., Mashek, D. (2007). Moral emotions and moral behavior. *Annual Review of Psychology, 58*, 345-372.

Waern, M., Rubenowitz, E., & Wilhemson, K. Predictors of suicide in the old elderly. Gerontology, 49(5), 328-244.

Ward, R.A. (1977). The impact of subjective age and stigma on older persons. Journal of Gerontology, 32, 227-232.

Way, B.B., Miraglia, R., Sawyer, D.A., Beer, R., & Eddy, J. (2005). Factors related to suicide in New York state prisons. International Journal of Law and Psychiatry, 28(3), 207-221.

Wicker, F. W., Payne, G. C., & Morgan, R. D. (1983). Participant descriptions of guilt and shame. Motivation and Emotion, 7, 25–39.

Winkler, G.E. (1992). Assessing and responding to suicidal jail inmates. Community Mental Health Journal, 28(4), 317-326.

Zhang, J., Grabiner, V.E., Zhou, Y., & Li, N. (2010). Suicidal ideation and its correlates

in prisoners: A comparative study in China. Crisis, 21(6), 33.5-342.

Zhang, J., Liang, B., Zhou, Y., & Brame, W. (2010). Prisons inmates' suicidal ideation in China: A study of gender differences and their impact. International Journal of Offender Therapy and Comparative Criminology, 54(6), 959-983.

Zhang, J., McKeown, R.E., Hussey, J.R., Thompson, S.J., & Woods, J.R. (2005). Gender differences in risk factors for attempted suicide among young adults: Findings from the third national health and nutrition examination survey. Annals of Epidemiology, 15(2), 167-174.

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