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An Exploratory Factor Analysis of the Acquired Capability for Suicide Scale in Male Prison Inmates

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Abstract

Prison inmates are exposed to a number of adverse conditions prior to and during incarceration that place them at risk for suicide. The interpersonal theory of suicide may prove useful in better understanding suicide in prisons, allowing for more effective prevention and treatment programs. However, no studies of the interpersonal theory have been conducted in prison populations. Further, there have been no studies examining the factor structure of the assessment of one of the theory's main constructs: the acquired capability for suicide. The current study examined the factor structure of the Acquired Capability for Suicide Scale in a sample of male prison inmates. We found that a four-factor model provided the best statistical and conceptual fit; though, only three of these factors were meaningful with an additional method-factor. The three resulting factors were each associated with previous exposure to painful and provocative events, but none differentiated suicide attempter status. Results suggest that the interpersonal theory has promise in application to suicide in prison populations, but more work is needed to develop a self-report measure of acquired capability, particularly as it relates to prisoners.

Keywords

Suicide in Prison; Acquired Capability for Suicide; Interpersonal Theory of Suicide; Fearlessness and Perceived Pain Tolerance

Suicide is a leading cause of death in prison inmates, accounting for half of all deaths in prisons worldwide (Fazel & Baillargeon, 2011). Although the rate of suicide in U.S. prisons (16 per 100,000)(Mumola, 2005) is comparable to that of men in the general population (19.17 per 100,000)(Center for Disease Control)(CDC, 2011), prisoners are exposed to a number of adverse conditions prior to and during incarceration that place them at risk for suicide (Baillargeon et al., 2009; Blaauw, Arensman, Kraaij, Winkel, & Bout, 2002; Dye, 2010). Unfortunately, identifying, documenting, and referring individuals at risk for suicide have proven difficult (Fruehwald, Frottier, Matschnig, & Eher, 2003). Some researchers

have suggested that a comprehensive understanding of suicide risk, such as that afforded by a unified theory of suicide, is needed to develop and implement effective prevention and intervention policies (Fruehwald & Frottier, 2005; Joiner et al., 2009b). However, little research has examined prisoners' increased risk for suicide within a theoretical framework.

Importation and deprivation theories explain the greater suicide rates in prisons as resulting from the higher prevalence of risk factors for suicide prior to incarceration and during incarceration, respectively. For instance, prison inmates exhibit higher rates of major depressive disorder, psychotic disorders, bipolar disorder, personality disorders, trauma, perpetration of violence in the community, deliberate self-harm, substance abuse, anxiety disorders, and previous suicide attempts; all of which are risk factors for suicide in the general population (Baillargeon et al., 2009; Blaauw et al., 2002; Blaauw, Kerkhof, & Hayes, 2005; Black, James, Evan, & Rogers, 2007; Fazel & Baillargeon, 2011; Fazel, Cartwright, Norman-Nott, & Hawton, 2008; Fazel & Danesh, 2002; Mandelli, Carli, Roy, Serretti, & Sarchiapone, 2011; Rivlin, Hawton, Marzano, & Fazel, 2010; Sarchiapone et al., 2009b; Shaw, Baker, Hunt, Moloney, & Appleby, 2004). Additionally, prison inmates are exposed to environmental factors during incarceration that are associated with suicide (Dye, 2010): overcrowding in prisons (Leese, Thomas, & Snow, 2006), isolation and single-cell occupancy (Bonner, 2006), trauma experienced in prison (Blaauw et al., 2002), and long sentences and hopelessness regarding release (Fazel et al., 2008; Fazel, Grann, Kling, & Hawton, 2011). Although identifying the higher prevalence of risk factors in prison populations is informative, such information does not allow for the facilitation of clinical program development that would be expected of invoking a unified theory of suicide. An empirically supported psychological theory of suicide would aid in the development of assessment and intervention programs for prison inmates by contextualizing how risk factors function together. Such a theory would enable practitioners to prioritize and focus on the most functionally relevant risk factors in a coherent manner that is easily disseminated.

The interpersonal theory of suicide may be useful in understanding prison suicide and in serving as the foundation for the development of assessment, prevention, and intervention programs (Joiner, Van Orden, Witte, & Rudd, 2009a; Van Orden et al., 2010). The theory posits that the desire and capability for suicide are both distinct and necessary for an individual to die by suicide. Suicidal desire results from feelings of thwarted belongingness and perceived burdensomeness (Joiner, 2005), which are hypothesized to be proximal risk factors for suicide ideation through which other established risk factors influence severity of suicide ideation. Thwarted belongingness is experienced when the need to connect to important others in a meaningful way goes unmet. Although objective markers of social relationships (e.g., number of social interactions per week) may be important, it is an individual's subjective feeling of disconnection and lack of reciprocal care that is most relevant for the development of suicidal desire. Perceived burdensomeness is the belief that one is sufficiently ineffective, to the point that he or she has become a liability to others. These feelings of burdensomeness or liability are so great that one feels that his or her death is worth more than his or her life. Prison inmates may be susceptible to thwarted belongingness due, in part, to their separation from important others upon incarceration. Prisoners may also be vulnerable to perceived burdensomeness as the circumstances that have led to their incarceration may be interpreted as an indication of incompetence, and their

incarceration may place significant hardships on family and friends. A growing body of research has supported the relations between thwarted belongingness, perceived burdensomeness, and suicidal ideation in psychiatric, military, and community samples, among others (see (Van Orden et al., 2010) for a review). However, considerably less attention has been given to the most novel aspect of the interpersonal theory: the acquired capability for suicide.

The *acquired capability for suicide*, is described as the reduction of the fear of death and increase in the tolerance for physical pain (Smith & Cukrowicz, 2010a; Van Orden et al., 2010). According to the interpersonal theory, an individual who desires suicide will not go on to make a serious or lethal suicide attempt in the absence of this fearlessness and pain tolerance. This acquired capability for suicide presumably emerges following repeated exposure to physically painful and psychologically provocative life events via habituation and opponent processes (Smith & Cukrowicz, 2010b; Solomon, 1980; Van Orden et al., 2010). The majority of the data supporting the role of acquired capability in the etiology of suicidal behaviors has been indirect. Non-suicidal self-injury and a history of previous suicide attempts, particularly multiple attempts, are strong predictors of death by suicide (Christiansen & Jensen, 2007; Haw, Bergen, Casey, & Hawton, 2007; Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006; Rudd, Joiner, & Rajab, 1996). This is consistent with the theory's position that the most effective method of developing the capability for suicide is via practicing behaviors highly related to suicide. Additionally, suicide attempters report less fear of suicide on the Reasons for Living Inventory compared to those with severe suicidal ideation in the absence of suicide attempts (Linehan, Goodstein, Nielsen, & Chiles, 1983; Malone et al., 2000). Laboratory-based pain administration studies comparing suicide attempters and controls also suggest that attempters possess higher pain tolerance and a greater threshold for pain detection (Orbach, Mikulincer, King, Cohen, & Stein, 1997; Orbach et al., 1996a; Orbach et al., 1996b).

Studies directly testing the acquired capability for suicide in undergraduates, young adults, and clinical outpatients demonstrate that acquired capability can distinguish between those who desire and those who have attempted suicide (Joiner et al., 2009b; Smith, Cukrowicz, Poindexter, Hobson, & Cohen, 2010b; Van Orden, Witte, Gordon, Bender, & Joiner, 2008). Consistent with the theory's description of acquired capability as developing in response to repeated exposure to painful and provocative life events, greater acquired capability is associated with more frequent exposure to painful and provocative life events, such as childhood sexual abuse, fights, physical violence, and a family history of suicide (Bebbington et al., 2009; Bender, Gordon, Bresin, & Joiner, 2011; Forman, Berk, Henriques, Brown, & Beck, 2004; Smith et al., 2010b). Prison inmates may be at particularly high risk for death by suicide due to higher levels of the acquired capability for suicide resulting from greater exposure to painful and provocative life events prior to or during incarceration (Blaauw et al., 2002; Fazel et al., 2011; Sarchiapone, Carli, Di Giannantonio, & Roy, 2009a). To date, no studies to our knowledge have explored this theory's application to prison inmates.

A second important unexplored issue is that of the factor structure of the only self-report survey measuring acquired capability: the Acquired Capability for Suicide Scale (ACSS).

The factor structure of the Interpersonal Needs Questionnaire, which assesses the components of the theory believed to influence suicidal desire (thwarted belongingness and perceived burdensomeness), has been demonstrated (Van Orden, Cukrowicz, Witte, & Joiner 2011). If the interpersonal theory is to be applied to prison populations, indeed to any suicidal population, more research using a valid and reliable assessment of acquired capability is required. Research conducted without knowledge of the ACSS's underlying factor structure may result in an inaccurate conceptualization of the construct and poor understanding of role of acquired capability and the etiology of suicide. Such a grave limitation has the potential to hinder efforts to translate the interpersonal theory to clinical practice.

Purpose & Hypotheses

The current study had two primary aims: 1) to examine the acquired capability for suicide in a prison sample and 2) to examine the factor structure of the only self-report measure currently available assessing the acquired capability for suicide. We used an exploratory approach in conducting the factor analysis due to the lack of previous exploration of the measure and no clear delineation of subscales. We then examined the relationship between painful and provocative life events and the acquired capability factors identified in the exploratory factor analysis. We hypothesized that greater exposure to painful and provocative life events would be associated with higher levels of acquired capability. We also hypothesized that the acquired capability for suicide would differentiate suicide attempters from non-attempters. We made no *a priori* predictions regarding differential relationships of the factors with life events exposure or suicide attempt status.

Method

Participants

Participants in this study included 399 male adult inmates from one state prison and one regional facility of Mississippi Department of Corrections. Participants ranged in age from 19 to 69 years ($M = 35.22$, $SD = 11.07$). Although most participants indicated they were African American (55.1%; $n = 220$) or Caucasian (36.1%; $n = 144$), some indicated being Native American (1.3%, $n = 5$), Hispanic/Latino (1.0%; $n = 4$), or Other (2.5%; $n = 10$); 4.0% ($n = 16$) did not indicate their race/ethnicity. Participants' level of educational attainment varied, with 2.0% ($n = 8$) having left school prior to completing 8th grade, 14.8% ($n = 59$) having completed 8th grade, 51.6% ($n = 206$) having obtained a GED or high school diploma, 17.0% ($n = 68$) having attended some college, 7.0% ($n = 28$) having obtained a college degree, and 1.0% ($n = 4$) having obtained an advanced degree.

Participants reported receiving an average sentence length of 9.11 years ($SD = 9.33$), although sentences ranged from 3 months to 60 years. Not represented in these figures, 32 participants (8.0%) indicated having received a life sentence. Using MDOC's categorization system for primary offenses of incarceration, 30.6% ($n = 122$) indicated being incarcerated for a drug offense such as distributing, manufacturing, or possessing an illicit substance, 27.6% ($n = 110$) indicated being incarcerated for a property offense such as larceny, burglary, or forgery, 22.3% ($n = 89$) indicated being incarcerated for a violent offense such

as homicide, aggravated assault, or kidnapping, and 9.0% ($n = 36$) indicated being incarcerated for a sexual offense such as sexual abuse of a vulnerable adult, possession of child pornography, or rape. Regarding time already served on their current sentence, the participants indicated a mean of approximately four years served ($SD = 5.29$), with the minimum time served being less than a month and the maximum time served being 31 years. Regarding total time served in their lifetime (i.e., current time served plus any previous time served), the participants indicated a mean of 7.43 years served ($SD = 7.19$), with the least amount of total time served being one month and the greatest time served being 35 years.

Measures

Acquired Capability for Suicide—The Acquired Capability for Suicide Scale (ACSS) is a 20-item self-report instrument developed by the authors of the interpersonal theory of suicide (Van Orden et al., 2008) to assess fearlessness of death and perceived tolerance for physical pain. The ACSS has been used in multiple studies on the interpersonal theory (Anestis, Bagge, Tull, & Joiner, 2011; Smith, Cukrowicz, Poindexter, Hobson, & Cohen, 2010a; Smith, Poindexter, & Cukrowicz, 2010c; Van Orden et al., 2008). Results have consistently shown that the ACSS is associated with life events believed to facilitate acquired capability as well as a lifetime history of suicide attempts (Smith et al., 2010a; Smith et al., 2010c; Van Orden et al., 2008). The ACSS has demonstrated good internal consistency (e.g., $\alpha = .88$) in student and clinical outpatient samples (Smith et al., 2010a). However, the ACSS has not been studied in a prison sample and its factor structure remains unexamined.

Painful and Provocative Life Events—The Painful and Provocative Life Events Scale (PPES) is a self-report instrument that requests participants to rate the frequency with which they have been exposed to varying life events deemed to be physically painful and/or psychologically provocative (Van Orden et al., 2008). Examples include intravenous drugs use, physical and sexual abuse, participation in contact sports, and accidental injury. The current study utilized a 74-item version of the measure, which was derived from other established measures of life events (e.g., the Traumatic Life Events Questionnaire, the Impulsive Behaviors Scale) to assess experiences believed to facilitate acquired capability. The internal consistency of the PPES in the current sample was excellent ($\alpha = .96$).

Depression—Depression was assessed using the Center for Epidemiological Studies-Depression Scale (CES-D). The CES-D is a 20-item self-report measure of depressive symptoms over the previous week (Radloff, 1977). Scores on the CES-D range from 0 to 60. A score of 16 has been suggested as indicative of potentially clinical significant depressive symptoms (Radloff, 1977). The reliability and validity of the CES-D has been demonstrated to be reliable and valid in clinical populations and diverse community samples (Radloff, 1977; Roberts, 1980). The internal consistency of the CES-D in the current sample was good ($\alpha = .86$).

Suicidal Ideation—Suicidal ideation was assessed using the Beck Scale for Suicide Ideation (BSSI). The BSSI is a 21-item self-report instrument that assesses suicidal ideation during the previous two weeks (Beck & Steer, 1991). Scores on the BSSI range from 0 to

42. Item 20 requests that participants indicate if they have ever attempted suicide. Respondents can endorse never having attempted suicide, having attempted suicide once, or having attempted suicide two or more times. Although this item relies on the respondents' determination, and thereby not directly assessing intent, we relied on this for a comparison of suicide attempters and non-attempters. The mean of the BSSI for clinical outpatients was 11.3 ($SD = 6.50$) (Beck & Steer, 1991). A score of 2 or more on the Scale for Suicide Ideation (Beck, Kovacs, & Weissman, 1979), the interview format of the BSSI, has been found to predict suicide (Brown, Beck, Steer, & Grisham, 2000). The BSSI has been demonstrated to possess good reliability and validity in clinical samples (Beck & Steer, 1991). The internal consistency of the BSSI in the current sample was good ($\alpha = .94$).

Procedure

The University and Department of Corrections Institutional Review Boards approved all study procedures. All participants provided written informed consent. Participants completed the self-report measures in small groups. No compensation was provided to participants.

Data Analysis

We first conducted an exploratory factor analysis using MPlus version 6.11 to determine the factor structure of the ACSS. Although Van Orden et al. (2010) described acquired capability as a two-factor construct (fearlessness and pain tolerance), we opted for an exploratory factor analysis due to the lack of previous exploration of the measure and no clear delineation of subscales. Additionally, we employed maximum likelihood estimation and a GEOMIN (oblique) factor rotation to increase interpretability of the factors while also allowing factors to correlate. Evaluation of the EFA models conformed to recommendations of Muthen and Muthen (Muthen & Muthen, 2008). Following acceptance of a final EFA model, we calculated factor scores by averaging the items indicated to load on the factors that could meaningfully be interpreted. These generated factor scores were used in subsequent analyses.

In order to examine predictions of the interpersonal theory in this prison sample, we examined the relationship of the resulting ACSS factors to painful and provocative life events. This test was conducted using multiple linear regression analyses with ACSS factor scores as the dependent variable(s) and the PPES as the independent variable. In order to ensure that this relationship was independent of current suicidal ideation or depressive symptoms, the BSSI and CES-D were included as covariates. We then conducted four zero-inflated poisson (ZIP) regression analyses predicting suicide attempt status (none, one, multiple attempts) from each of the resulting factors independently and then simultaneously. The ZIP regression analysis is more appropriate for count variables that are not normally distributed, such as the number of suicide attempts, compared to more commonly used methods (e.g., analysis of variance). Further, the zero-inflation option is able to model and determine potential influence of excess zeros, or reports of no suicide attempt history, which is common when examining suicide attempt history and was the case in our sample.

Results

Descriptive Information

Overall, the sample demonstrated low levels of suicidal ideation on the BSSI ($M = 2.22$, $SD = 5.30$); though scores ranged from zero to 39. Of the 399 participants, 21 (5.26%) reported having attempted suicide once and 28 (7.02%) reporting having made multiple suicide attempts. The sample reported mild to moderate depressive symptoms on the CES-D ($M = 20.57$, $SD = 11.45$). Although a primary aim of the current study was to explore the factor structure of the ACSS, we calculated the total (summed) scale score of the 20-items comprising the original measure. The 20-item ACSS mean was 44.55 ($SD = 13.28$), which is lower than scores reported in other samples (e.g., $M = 64.31$, $SD = 12.87$) (Bender et al., 2011).

Exploratory Factor Analysis of the Acquired Capability for Suicide Scale

Examination of the eigenvalues suggested a possible 5-factor model (eigenvalues greater than one). However, consistent with the recommendation of Muthen and Muthen, we selected the most parsimonious model with acceptable fit that provided a conceptually and theoretically coherent and meaningful factor solution. Model fit was tested by χ^2 and root mean square of the association (RMSEA). We selected the four-factor model as it demonstrated excellent fit statistics compared to the three and five factor models and provided the most conceptually and theoretically meaningful factors (see Table 1 for fit statistics). Factor loadings of this four-factor model and items comprising the factors are presented in Table 2. Our evaluation of the content of the items comprising the four factors suggested that only three of these factors are meaningfully interpretable. The factors were described as 1) General Fearlessness and Perceived Pain Tolerance ($\alpha = .702$, 95%CI = .656 – .742), 2) Fearlessness of Death ($\alpha = .727$, 95%CI = .687 – .762), and 3) Spectator Enjoyment of Violence ($\alpha = .718$, 95%CI = .672 – .757). The fourth factor was a *method factor* represented only by reverse scored items and, therefore, was not included in any subsequent analyses. Correlations among the calculated ACSS scales can be found in Table 3.

Relationship Among ACSS Factors and Variables Predicted to be Associated with Acquired Capability

In order to examine the relationship of exposure to painful and provocative life events and ACSS factors, we conducted three separate multiple linear regression analyses with each of the three factors as the dependent variables, the PPES as the independent variable, and the BSSI and CES-D as covariates. Each of the three models was significantly predictive of the ACSS factors (General Fearlessness and Perceived Pain Tolerance: $F_{(3, 278)} = 14.171$, $p < .001$, $R^2 = .132$; Fearlessness of Death: $F_{(3, 281)} = 4.360$, $p = .005$, $R^2 = .045$; Spectator Enjoyment of Violence: $F_{(3, 284)} = 23.701$, $p < .001$, $R^2 = .202$). Within each model, the PPES significantly predicted the ACSS factors (see Table 4).

In order to examine the relationship of ACSS factors scores with suicide attempt history, we conducted four separate ZIP regression analyses with suicide attempt status (zero, one, multiple suicide attempts) as indicated by item-20 of the BSSI as the dependent variable and

ACSS factor scores as the independent variables. We first examined the relationship of suicide attempt status with each the factors independently in separate analyses and then entered all three simultaneously into one analysis. All of the parameter estimates among the factors and suicide attempt status, both independently and in combination, were not significant.

Discussion

The current study is the first to our knowledge to examine the interpersonal theory of suicide in a prison sample as well as the first to examine the factor structure of the only available self-report measure of the acquired capability for suicide. Results indicated that when applied to male prison inmates the ACSS is not wholly consistent with the two-factor model described by the theory's authors (Van Orden et al., 2010). Rather, we found that a four-factor model provided the best statistical and conceptual fit, though of these four factors only three were interpretable. Consistent with hypotheses, painful and provocative life event exposure predicted all three ACSS factors. Contrary to hypotheses, however, none of the ACSS factors differentiated suicide attempters (multiple and/or single) from non-attempters.

The three interpretable factors were General Fearlessness and Perceived Pain Tolerance, Fearlessness of Death, and Spectator Enjoyment of Violence. The fourth factor was a method factor comprised of reverse scored items. The separation of these latent factors within the ACSS points to some important distinctions. The General Fearlessness and Perceived Pain Tolerance factor most closely approximates Van Orden's description of acquired capability (Van Orden et al., 2010). However, the pain tolerance content of the ACSS factor identified was comprised of one item. It remains questionable, therefore, as to whether fearlessness and pain tolerance are part of a unitary construct of acquired capability or whether they are related, but distinct, as has been suggested (Smith & Cukrowicz, 2010b). Secondly, these results suggest that there is a difference between general fearlessness and fearlessness of death, specifically. Lastly, the Spectator Enjoyment of Violence factor raises the issue of differences between acquired capability and the proneness to be exposed to violence or what we deem to be risk factors for developing acquired capability. To date, none of these distinctions has adequately been addressed in theoretical writings or empirical examinations of the acquired capability for suicide and the interpersonal theory. Such distinctions are important as they call into question precisely which aspects or features of fearlessness and/or pain tolerance are functionally most relevant for the capability for suicide.

Consistent with extant data examining the ACSS in non-prison samples (Bender et al., 2011; Bryan & Cukrowicz, 2011; Smith et al., 2010b), each of the ACSS factors was significantly and positively associated with previous exposure to painful and provocative life events. The theory indicates that acquired capability is developed via habituation processes facilitated by such event exposure. Additionally, the ACSS factors were unrelated to suicidal ideation, further supporting the notion that acquired capability is distinct from suicidal desire (Smith & Cukrowicz, 2010b; Smith et al., 2010b). The current study failed to find support for the interpersonal theory in regards to the differentiation of suicide attempters (never, single, and multiple attempters). There are at least two potential, though not mutually exclusive,

explanations for this finding. Acquired capability has been described as distinct from suicidal desire and only relevant for suicide risk insofar as an individual experiences the desire for death by suicide. Therefore, it might be expected that acquired capability might not differentiate attempters from non-attempters who are not actively suicidal. Consistent with this interpretation, the current sample demonstrated low levels of suicidal ideation.

Additionally, this finding might be due to the previous lack of consideration to the experiences of prison inmates in the conceptualization of acquired capability and the design of the ACSS. We proposed that prison inmates might be at higher risk for suicide because they are more frequently exposed to painful and provocative life events and experience comparatively higher levels of acquired capability (Sarchiapone et al., 2009a). However, in addition to the inability of the ACSS factors to differentiate attempter status, the means of the 20-item ACSS in the current sample were lower than that reported from samples of clinical outpatients and military personnel (Bender et al., 2011). Although the lack of normative data on the ACSS makes such comparisons difficult, the lower scores on the 20-item ACSS suggest that items comprising the ACSS might not adequately capture the relevant aspects of the construct in this population.

Furthermore, the prison setting itself may confound the interpretation of the items by prison inmates; thereby making their responses not representative of the construct. Items such as, “I am not at all afraid to die” and “People describe me as fearless,” may mean something very different to someone for whom violence and threat are more normative. The greater exposure to certain forms of violence and threat (e.g., gang involvement, drug related violence, sexual victimization), experienced by prison inmates prior to incarceration may influence a prisoner’s interpretation of such items. For example, prison has been described as a social system heavily laden with hyper-masculine ideals and values, such as the tendency to suppress negative emotions aside from anger and to not admit to weakness (Kupers, 2005). Although such values have been demonstrated to be a potential vulnerability to the development of acquired capability in college student samples (Witte, Gordon, Smith, & Van Orden, 2012), extremely high levels of male gender norm adherence may confound reports of fearlessness and perceived pain tolerance.

Alternatively, exposure to violence and threat prior to incarceration may, rather than diminishing self-preservation reflexes, result in sensitization to death and threat-related cues and an increased survival orientation (Smith & Cukrowicz, 2010b). Despite the reality that prison is a highly controlled setting in which violence does not occur at levels often supposed by the public, it is an unpleasant setting that may cause anxiety in inmates, particularly for those who have experienced violence and threat in the past (O’Donnell & Edgar, 1998, 1999). Additionally, the ACSS items often ask respondents to answer questions in relation to most people. The reference point used for general or clinical populations is likely to differ compared to prison inmates, who may, on average, be higher in fearlessness and pain tolerance. As such, both individual and contextual variables may influence prisoners to experience anxiety about potential threats to their safety, which may be reflected in reports on the ACSS.

In order to gain insight into the influence of pre-incarceration violence on fearlessness of death and perceived pain tolerance, it may be valuable to examine security level designation. Prisoners designated as maximum security may have engaged in more violence towards others prior to incarceration and, therefore, may differ in important ways in their level of fearlessness and pain tolerance. For instance, engaging in violence specifically directed at others versus being a passive victim or observer of violence may be more functionally relevant to the development of the capability for suicide. The majority of the participants in the current study were incarcerated in a facility that housed minimum, medium, and maximum security level inmates. However, none of the inmates sampled were designated as maximum security, nor had they been placed on any precautionary restrictions due to recent violence. Future research examining the interpersonal theory in prisoners should address the influence of security designation and engagement of violence prior to and during incarceration as it relates to the development of acquired capability. The clinical application of the interpersonal theory has been discussed and such programs could be translated and disseminated to a prison setting (Joiner et al., 2009a). Current translations of the interpersonal theory have focused on targeting the interpersonal components of the theory: thwarted belongingness and perceived burdensomeness, as they are more malleable and subject to intervention. We advocate for the evaluation of a comprehensive system of assessment, intervention, and prevention based on the interpersonal theory. Such a system would invoke the central tenets of the theory (e.g., the distinction of chronic and acute risk, designation of chronic risk, and ongoing evaluation of idiographic indicators of thwarted belongingness and perceived burdensomeness) while recognizing the need for greater research within a prison setting.

Individual components of such a system targeting the interpersonal components might include a pen-pal program resembling the caring letters concept (Motto, 1976), greater visitation by family and friends, and programs that promote contributions to family, friends, or society at large by prison inmates. The role of acquired capability in clinical practice has been discussed primarily in terms of assessment (Stellrecht et al., 2006). Although previous suicide attempts are recognized as the strongest predictor of future deaths by suicide, it remains fact that the majority of deaths by suicide occur on the first attempt (Joiner et al., 2005). Assessing prisoners' acquired capability for suicide might serve similarly to determine which of those who experience suicidal ideation are at high risk for death by suicide and, thus, are candidates for direct interventions targeting those factors that acutely increase one's risk for suicide. In male prisoners, variables such as violent offense history or a record of aggression towards officers and other inmates might serve as indicators of high acquired capability. However, no assessment measures or guidelines for evaluating acquired capability outside of information pertaining to prior suicide attempt history, in clinical patients or prison inmates, has been studied.

Limitations

The current study suffered from important limitations. Most notably, the sample reported very low levels of previous suicidal behavior (less than 11%). This reiterates the reality that suicide is a low base-rate event and, as such, is difficult to predict (Pokorny, 1983) – which we find to be a critical feature in identifying the need for theory-guided methods of

assessment, prevention, and intervention. Such low numbers of prior suicide attempts may have precluded detection of differences between attempters and non-attempters. Although we found support for the interpersonal theory in regards to the relationship between life events and acquired capability, the measure of life events, the PPES, has now appeared in multiple formats across several studies and has not been subject to validation. This assessment of life events was also not able to determine if painful and provocative life events occurred prior to or during incarceration, which may be vital in understanding prisoners' suicide risk. Our definition of a suicide attempt was also problematic. Suicide attempts were identified by self-report endorsement to a single item on the BSSI. This item fails to assess intent and, therefore, does not wholly conform to the most widely used definitions of a suicide attempt (Orbach et al., 1996c).

Conclusion

The current study is the first to examine the acquired capability for suicide, a major component of the interpersonal theory of suicide, in a prison sample and the first to explore the factor structure of the ACSS. We found partial support for the application of the interpersonal theory of suicide to adult male prisoners. The ACSS factors were associated with exposure to painful and provocative life events. However, the inability of the factors to differentiate never, single, and multiple attempters and the lower scores on the total ACSS compared to previous samples suggest greater consideration of specific subpopulations, such as prisoners, when applying the theory. Results indicate that the theory has promise for helping to explain the higher suicide rates in prisoners, but more research is required to more adequately conceptualize and measure acquired capability in this population.

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Table 1

Exploratory Factor Analysis Fit Statistics

One Factor Model	$\chi^2(170) = 993.232, p = .000$	RMSEA = .113, 90% CI = .106–.120, $p = .000$	CFI = .444	SRMR = .112
Two Factor Model	$\chi^2(151) = 556.952, p = .000$	RMSEA = .084, 90% CI = .077–.092, $p = .000$	CFI = .726	SRMR = .067
Three Factor Model	$\chi^2(133) = 345.265, p = .000$	RMSEA = .065, 90% CI = .057–.073, $p = .002$	CFI = .857	SRMR = .046
Four Factor Model	$\chi^2(116) = 221.802, p = .000$	RMSEA = .049, 90% CI = .039–.059, $p = .550$	CFI = .928	SRMR = .034
Five Factor Model	$\chi^2(100) = 173.973, p = .000$	RMSEA = .044, 90% CI = .033–.055, $p = .804$	CFI = .950	SRMR = .029

Note: RMSEA = Root Mean Square Error of Association, CFI = Comparative Fit Index, SRMR = Standardized Root Mean Square Residual

Table 2

Factor Loadings of the Acquired Capability for Suicide Scale Items

	Factor 1 General Fearlessness & Willingness to Tolerate Pain	Factor 2 Fearless ness of death	Factor 3 Spectator Enjoyment of Violence	Factor 4 Reverse Scored Items
1. Things that scare most people do not scare me	<u>.735</u>	.088	-.030	-.057
2. The sight of my own blood does <u>not</u> bother me	<u>.566</u>	.231	-.022	-.051
4. I can tolerate a lot more pain than most people	<u>.432</u>	-.005	.180	.100
5. People describe me as fearless	<u>.467</u>	.007	.181	.069
7. The fact that I am going to die does not affect me	.102	<u>.590</u>	.021	.096
9. Killing animals in a science course would not bother me	.061	<u>.409</u>	.116	-.005
11. It does <u>not</u> make me nervous when people talk about death	.115	<u>.553</u>	.057	-.028
14. I am not disturbed by death being the end of life as I know it	-.070	<u>.648</u>	.002	.128
19. I am not at all afraid to die	.075	<u>.583</u>	.018	.216
15. I like watching the aggressive contact in sports games	.030	-.019	<u>.617</u>	-.022
16. The best parts of hockey games are the fights	-.080	.024	<u>.809</u>	.002
17. When I see a fight, I stop to watch	.038	.021	<u>.602</u>	-.113
6. The sight of blood bothers me a great deal (R)	.087	-.157	.103	<u>.352</u>
8. The pain involved in dying frightens me (R)	-.019	-.075	.015	<u>.680</u>
10. I am very much afraid to die (R)	-.121	.216	-.025	<u>.766</u>
12. The sight of a dead body is horrifying to me (R)	.158	-.046	-.063	<u>.582</u>
13. The prospect of my own death arouses anxiety in me (R)	-.004	.050	-.012	<u>.596</u>
3. I avoid certain situations (e.g., certain sports) because of the possibility of injury	.025	-.197	.087	.160
18. I prefer to shut my eyes during the violent parts of movies	.230	-.202	.076	.205
20. I could kill myself if I wanted to. (Even if you have <i>never</i> wanted to kill yourself, please answer the question)	.048	.095	.194	.075

Note: We used .30 as a criterion for inclusion onto a factor. Factor loadings greater than .30 are underlined.

Table 3

Descriptive Statistics & Correlations between ACSS Factors

	Factor 1	Factor 2	Factor 3
	General Fearlessness & Willingness to Tolerate Pain	Fearlessness of Death	Spectator Enjoyment of Violence
Factor 1	1.94 (1.14)	.437*	.300*
Factor 2	-	2.13 (1.11)	.242*
Factor 3	-	-	2.35 (1.27)

Note: Means (standard deviations) are presented on the diagonal. We used the mean of the items identified in the ACSS factors to calculate factor scores to increase comparability between factors. Items were keyed such that higher scores are indicative of higher levels of the construct.

* indicates a significant correlation, $p < .05$.

Table 4

Prediction of ACSS Factors by Painful & Provocative Event Exposure

	Factor 1	Factor 2	Factor 3
	General Fearlessness & Willingness to Tolerate Pain	Fearlessness of Death	Spectator Enjoyment of Violence
CESD	$\beta = -.124, t = -1.97, p = .049$	$\beta = -.063, t = -.96, p = .337$	$\beta = .075, t = 1.19, p = .234$
BSSI	$\beta = .037, t = .61, p = .544$	$\beta = .245, t = .25, p = .806$	$\beta = -.066, t = -1.08, p = .279$
PPES	$\beta = .314, t = 5.39, p = .000$	$\beta = .196, t = 3.24, p = .001$	$\beta = .303, t = 5.18, p = .000$

Note: CESD=Center for Epidemiological Studies Depression Scale, BSSI=Beck Scale for Suicide Ideation, PPES=Painful and Provocative Life Events Scale; regression coefficients are standardized.