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Suicide Attempts and Personal Need for Structure Among Ex-Offenders

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Abstract

Suicide attempts were examined in relation to sociodemographic (age, gender, ethnicity), psychopathological (prior psychiatric hospitalizations, physical and sexual abuse histories), and cognitive (personal need for structure) variables among a sample of ex-offenders with substance use disorders ($N = 270$). Hierarchical logistic regression was conducted to determine whether personal need for structure would significantly predict whether participants reported past suicide attempts beyond sociodemographic and psychopathological predictors. Personal need for structure and prior psychiatric hospitalizations were the only significant predictors, with higher values of these predictors increasing the likelihood of suicide attempts. Findings are consistent with a cognitive model for understanding suicide behavior, suggesting that persons with a high need for cognitive structures operate with persistent and rigid thought processes that contribute to their risk of suicide.

Keywords

suicide; personal need for structure; psychiatric hospitalizations; ex-offenders; substance use disorders

Substance use disorders are highly prevalent among ex-offenders (Gunter et al., 2008), and substance use might be the greatest risk factor for recidivism (Broome, Knight, Hiller, & Simpson, 1996; Keene, 1997). In addition, suicide rates are high among this population (Cook & Davis, 2012), even after release from prison (Daigle & Naud, 2012), and persons with substance use disorders were found to be at higher risk of suicide than those who do not have substance use disorders among persons involved with criminal justice systems (Ruiz, Douglas, Edens, Nikolova, & Lilienfeld, 2012). Although recent investigations have identified risk factors for suicide among offenders, little is known about risk factors for

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suicide among those with substance use disorders, a sub-population of offenders who are probably over-represented across criminal justice settings in the United States.

There has been a growing concern in identifying risk factors for suicide among offenders, and many investigations have examined factors that are typically related to various psychopathologies. For example, factors associated with suicide histories among this population include aggression that is both reactive (Swogger, Walsh, Maisto, & Conner, 2014) and outwardly directed (Swogger, Van Orden, & Conner, 2014), traits such as negative emotionality and low constraint (Douglas et al., 2008), physical and sexual abuse histories (Verona, Hicks, & Patrick, 2005), traumatic life experiences (Gunter, Chibnall, Antoniak, McCormick, & Black, 2012), and impulsivity (Douglas et al., 2008; Verona et al., 2005), although high levels of impulsivity may not necessarily predict suicidal behavior (Carli et al., 2010). However, there is a dearth of literature that has examined non-psychopathological factors (i.e., those that are not typically related to various psychopathologies) and suicide among offenders.

For instance, interpersonal factors (i.e., those involving relationships between one and others) such as perceived burdensomeness and thwarted belongingness were found to directly and indirectly predict suicide risk among offenders (Cramer et al., 2012). However, research evidence from non-criminal justice samples suggests intrapersonal factors (i.e., those occurring within the individual) are greater predictors for suicide than interpersonal factors (May & Klonsky, 2013). In terms of intrapersonal factors, significantly lower levels of optimism were observed among ex-offenders with suicide histories compared with those without suicide histories (Perry & Olason, 2009). In addition, evidence from an investigation involving a community sample demonstrated an inverted relationship between optimism and the personal need for structure (Ruiselova, Prokopcakova, & Kresanek, 2012). Given the relationship of optimism to both suicide history and need for structure, it is possible this cognitive need may be related to suicide.

Personal need for structure is a construct that involves one's desire for cognitive simplicity with a need to construct one's perceptions in clear and certain forms (Neuberg & Newsom, 1993). Personal need for structure is a concept that is closely related to having the need for rigid cognitive processes associated with attitudes and behaviors (Steinmetz, Loarer, & Houssemand, 2011), and high levels of structure need were associated with a lack of creative processes in relation to awareness of one's mortality (Routledge & Juhl, 2012). In addition, both rigidity (Fergus & Rowatt, 2014) and structure (DeRoma, Martin, & Kessler, 2003) were found to be negatively related to uncertainty/ambiguity tolerance.

Taken together, findings across these studies suggest that persons who have high levels of personal need for structure might be at risk of suicide because they lack creative solutions in relation to mortality concerns, and have little tolerance for uncertainty, and have convergent thinking styles that are rigid (Coleman, Kaplan, & Casey, 2011). It is reasonable to suspect that rigid thinking styles and a lack of tolerance for ambiguity might be prevalent among offenders who recidivate, such as those with substance use disorders. Thus, there is a need to examine whether high levels of personal need for structure are related to suicide risk for this population. To our knowledge, no one has examined personal need for structure among ex-

offenders with substance use disorders who might be at higher risk of suicide compared to those without substance use disorders (Ruiz et al., 2012).

Examining non-psychopathological factors and psychopathological factors related to suicide among ex-offenders with substance use disorders might increase our understanding of suicide risk for this population. Understanding the relationship between personal need for structure and suicide could have important research and treatment implications, particularly for persons with substance use disorders inside and outside of incarceration settings. It is reasonable to expect high levels of personal need for structure would relate to increased rates of suicide based on related studies. The present study examined personal need for structure and suicide histories among a sample of ex-offenders exiting treatment for substance use disorders. We hypothesized that personal need for structure would predict increased suicide histories beyond what would be expected from psychopathological predictors.

Method

Participants

Two hundred seventy adults (224 men and 46 women) with a mean age of 40.4 ($SD = 9.5$) years were recruited from inpatient treatment centers in Northern Illinois, in the United States. Regarding marital status, 74.9% had never been married, 18.3% were divorced/separated/widowed, and 6.9% were married or remarried. In terms of occupations, the largest category was unskilled, and this represented approximately 40% of the sample. In terms of ethnicity, the majority (74.1%) of participants were African American, 21.1% were White, 3.3% were Hispanic, and 1.5% reported other racial groupings.

Most participants reported having been unemployed (32.7%), in a controlled environment (27.7%), or employed either part-time (25.4%) or full-time (11.2%) in the past 3 years. Participants reported an average total monthly income of US\$367.85 ($SD = 709.66$) with an average of 10.9 ($SD = 1.9$) years of education. Participants had been previously incarcerated an average of 9.9 times, with their most recent incarceration averaging 15.4 months, had been most recently released from prison for an average of 144.3 days, and reported an average of 3 previous treatments for substance use disorders.

Procedures

The present investigation was proposed to and approved by an institutional review board. Participants were enrolled in a larger randomized controlled trial of alternative models of aftercare and were either currently in or recently discharged from inpatient treatment for a substance use disorder, described in detail elsewhere (Jason, Olson, & Harvey, 2015). All participants were recruited through inpatient substance use treatment facilities or reentry/case management programs. Ninety-three percent of the sample ($n = 251$) was recruited from inpatient substance use treatment facilities where participants were completing treatment. Seven percent ($n = 19$) were obtained through chain-referral sampling, although they had recently completed inpatient treatment for substance use disorders. Recruitment of participants started in March 2008, and ended in May 2011. Study eligibility included being in (or recently discharged from) inpatient treatment for a substance use disorder, having been

incarcerated (in prison or jail) in the past 24 months, and agreeing to be randomly assigned to an experimental-design in a separate investigation (Jason et al., 2015). Exclusion criteria consisted of not meeting eligibility criteria and/or a legal history of violent crime. Forty-one were excluded, and 13 chose not to participate, resulting in an 83% overall response rate of all participants approached. All participants were engaged in a process of informed consent that included the use of measures in both the parent study and present investigation, completed interviews prior to or on the day of completing their inpatient treatment program, and received US\$40 for their involvement.

Measures

Demographics—We created a brief survey to collect sociodemographic characteristics. In addition, this brief survey solicited participants' information regarding their previous treatments for substance use disorders and incarceration histories.

Personal need for structure—Thompson, Naccarato, and Parker's *Personal Need for Structure* (PNS; Neuberg & Newsom, 1993) is a 12-item instrument measuring the extent to which people are dispositionally motivated to cognitively structure their world in simple and unambiguous ways. Individuals with higher scores on the PNS tend to prefer high levels of cognitive structure and feel discomfort with less structure. Participants were directed to respond to items on a 6-point Likert-type response scale (*strongly disagree* to *strongly agree*). Example items include, "It upsets me to go into a situation without knowing what I can expect from it" and "I hate to change my plans at the last minute." Neuberg and Newsom (1993) recommend using 11 PNS items for deriving a total scale score, and they found very good internal consistency (Cronbach's alphas ranged from .76 to .86) across several samples. We used these 11 items in the present study, and the internal consistency was adequate (Cronbach's alpha = .68).

Suicide attempts and psychopathological factors—The *Addiction Severity Index–Lite* (ASI-Lite; McLellan, Cacciola, & Zanis, 1997), a briefer version of the *Addiction Severity Index* (ASI; McLellan et al., 1992), was used to assess problems in areas commonly affected by substance dependence: medical and psychiatric problems, drug use, alcohol use, illegal activity, family relations, and family history. The ASI has good internal consistency and excellent predictive and concurrent validity (McLellan et al., 1992), and the ASI-Lite has been demonstrated as being quite comparable with the ASI with good validity and reliability (Cacciola, Alterman, McLellan, Lin, & Lynch, 2007).

Lifetime histories of suicide attempts were measured using the ASI-Lite item that asked whether participants had ever attempted suicide, with dichotomous (yes/no) responses to this item. Assessing suicide attempts in this manner has been conducted in previous investigations among persons with substance use disorders (O'Boyle & Brandon, 1998) and offenders (Jeglic, Spada, & Mercado, 2013; Swogger, Van Orden, & Conner, 2014; Swogger, Walsh, Maisto, & Conner, 2014).

Psychopathological factors (i.e., those that are typically related to various psychopathologies) were examined in the present study to control for their variance in our analytic model that assessed the predictive value of personal need for structure in relation to

suicide. These consisted of participants' number of (lifetime) prior psychiatric hospitalizations, and physical and sexual abuse histories. We used the ASI-Lite to assess participants' number of prior psychiatric hospitalizations, a variable that has been found to predict suicide attempts in samples of offenders (Mallett, DeRigne, Quinn, & Stoddard-Dare, 2012), predicting suicide rates higher than those found in the general population (Bjork & Lindqvist, 2005). In addition, the inclusion of prior psychiatric hospitalizations in our analytic model allowed us to control for potential confounding effects in relation to gender, as women were found to report significantly more prior psychiatric hospitalizations than men (Gunter et al., 2012).

Physical and sexual abuse histories were measured using ASI-Lite items that asked whether participants had ever been physically or sexually abused by others, with dichotomous (yes/no) responses to these items. Physical and sexual abuse histories have been assessed in examining suicide risk among women offenders (Verona et al., 2005), including studies that used these ASI-Lite items in samples consisting of persons in treatment for substance use disorders (Morrill, Kasten, Urato, & Larson, 2001) and those with incarceration histories (Belenko, Lin, O'Connor, Sung, & Lynch, 2005).

Data Analytic Approach

Results of the present study are a secondary analysis of a larger investigation (Jason et al., 2015). We used a hierarchical logistic regression model to examine predictors of past suicide attempts (coded 0 = *no*, 1 = *yes*), as this analytic approach has been used in previous investigations that examined suicide histories and/or suicide risk as a dichotomous outcome variable among persons' offenders (Gunter et al., 2012; Howard, Lennings, & Copeland, 2003; Swogger, Van Orden, & Conner, 2014; Swogger, Walsh, Maisto, & Conner, 2014). We entered predictors sequentially in three blocks in an order that reflected their temporal relationship to suicide attempts. Sociodemographic variables were entered in the first block of the model to control for their variance in suicide attempts, followed by psychopathological and cognitive variables in the second and third blocks, respectively. We entered PNS scores in the third block to examine their relationship to suicide attempts beyond what might be accounted for by other variables in the model. We use the terms *prediction* and *predictors* in the present study to be consistent with our conceptual model and analytic strategy, and we recognize that *post-diction* may be the more appropriate term to use for our cross-sectional design.

Statistical method—Descriptive analyses were conducted to provide sociodemographic characteristics of the sample in addition to describing rates of prior psychiatric hospitalizations, physical and sexual abuse histories, substance use, and suicide attempts. Chi-square tests were conducted to examine proportional differences among participants based on categorical sociodemographic data in relation to suicide attempts. A two-way (gender, ethnicity) ANCOVA test was conducted to examine differences in the frequencies of prior psychiatric hospitalizations while treating age as a covariant, and a hierarchical logistic regression analysis was used to test our hypothesis. Due to the number of cases available for analyses ($n = 192$), we limited the number of predictors in the logistic model to decrease the chance of overestimation of odds ratio and beta coefficients (Agresti, 2007) by

coding ethnicity into two categories (African American, Other). To interpret the statistically significant effects of the model, the regression coefficients that were expressed in log units were exponentiated to produce an odds ratio interpretation of coefficients.

Missing data—A listwise deletion approach was used to evaluate data and calculate analyses, and participants with missing data (29% of all available cases) were excluded from analyses. We utilized a listwise approach instead of imputing values that would have increased the risk of artificially reducing variance given the large proportion of missing cases, as the use of true scores are ideal for multiple regression models. A missing values analysis of all the predictor and dependent variables indicated that the data were missing completely at random (MCAR), Little's MCAR test, $\chi^2(11) = 8.88$, $p = .63$; thus, our listwise deletion approach to treating missing cases was a valid technique for producing relatively unbiased estimates of regression coefficients (Allison, 2009).

Results

Preliminary Analyses

Participants reported an average of 1.12 ($SD = 3.39$) prior psychiatric hospitalizations with 9.6% of the sample ($n = 26$) reporting suicide attempts. A number of participants reported lifetime histories of physical ($n = 31$) and sexual ($n = 22$) abuse. There were no significant differences in the proportion of suicide attempts based on gender or racial groupings. In terms of substances used, the majority (41.4%) reported a history of using heroin/opiates, followed by cocaine (27.8%), alcohol (12.8%), polysubstance use (11.3%), and cannabis (6.4%), with 7% of the sample reporting injection drug use. In terms of substance use in the past 6 months, participants ($n = 267$) reported an average number of days using alcohol 20.0 ($SD = 40.7$) and drugs 44.7 ($SD = 57.4$) for a combined alcohol/drug use average of 33.33 days ($SD = 41.21$), ranging from 0 to 180 days of alcohol and drug use.

We also examined whether differences in the frequencies of prior psychiatric hospitalizations were related to two factors—gender and race—and whether age was a covariant of this model. A two-way ANCOVA was conducted to examine differences in the frequencies of prior psychiatric hospitalizations among these factors. The results of these factors (and main factor interactions) were not significant.

Unfortunately, the small number of cases in terms of participants' physical and sexual abuse histories (both dichotomous predictor variables) prevented us from using them in our major analyses. We limited the number of dichotomous predictor variables to gender and ethnicity given our number of available cases, as increasing the number of dichotomous predictor variables would increase the likelihood of spurious results in relation to these variables.

Major Analyses

The omnibus test of sociodemographic coefficients for the first block was not significant, $\chi^2(3) = 4.96$, $p = .18$. However, the omnibus test of psychopathological coefficients for the second block was significant, $\chi^2(1) = 10.14$, $p < .001$. After controlling for age, gender, and ethnicity, participants' history of prior psychiatric hospitalizations was a significant psychopathological predictor of suicide histories, Wald's $\chi^2(1) = 7.18$, $p < .01$. In addition,

the inclusion of PNS scores in the third block resulted in a significant omnibus result, $\chi^2(1) = 4.99, p < .05$, indicating this model was a good fit with the data, $\chi^2(5) = 20.10, p < .011$. Only history of prior psychiatric hospitalizations, Wald's $\chi^2(1) = 8.67, p = .003$, and PNS scores, Wald's $\chi^2(1) = 4.53, p = .033$, were significant predictors of the model, presented in Table 1.

There were no other significant variables within our logistic model, and results were statistically similar when substance use in the past 180 days was added to it. In addition, we constructed and tested models that included main factor interactions between prior psychiatric hospitalizations and PNS scores, interactions between prior psychiatric hospitalization and other factors (sociodemographic and substance use coefficients), and interactions between PNS scores and these other factors, and no significant interaction effects were observed in these analyses. We also constructed and tested models that excluded sociodemographic variables and included only prior psychiatric hospitalizations and PNS scores, and results from these models were statistically similar to those presented.

Last, we constructed and tested models that included physical and sexual abuse histories (changing the order of each psychopathological variable entered in separate blocks), with and without sociodemographic variables in these models. Although such model testing did not reveal physical and sexual abuse histories to be significantly related to suicide histories, the results of these models were statistically similar to those presented in that both prior psychiatric hospitalizations and PNS scores were significant predictors of suicide attempts.

Discussion

As expected, personal need for structure was a significant predictor of our analytic model in that participants with high PNS scores were significantly more likely to have had suicide attempts than those with low PNS scores. This finding is consistent with a cognitive model for understanding suicidal behavior whereby cognitive processes associated with psychiatric disturbance and suicide acts are believed to play an integral role in addition to predispositional vulnerabilities and stress (Wenzel & Beck, 2008). In the absence of any empirical investigation on personal need for structure and suicide to date, we think it is important to interpret this finding in relation to a factor analytic investigation (Steinmetz et al., 2011) that found psychological rigidity to be a construct that includes some degree of personal need for structure. In this light, the link between personal need for structure and suicide suggests cognitive rigidity is a more persistent cognitive style related to suicide and not necessarily a temporary state related to ideation (Marzuk, Hartwell, Leon, & Portera, 2005) as histories of suicide attempts were assessed in the present study. Of course, additional investigations are needed to substantiate and further explore this claim.

Likewise, the relationship between personal need for structure and suicide in the present study might be understood in the context of mortality salience (i.e., awareness of one's death). Routledge and Juhl (2012) found persons with high levels of personal need for structure were less creative in response to mortality salience, perhaps indicating a rigid cognitive style of processing existential threats, whereas engaging in flexible and explorative thought processes after exposure to morality salience increased perceptions of meaning

among persons with low personal need for structure (Vess, Routledge, Landau, & Arndt, 2009). In addition, mortality salience was related to increased death anxiety among persons with low, but not high, personal need for structure (Routledge, Juhl, & Vess, 2013). Taken together, investigations on personal need for structure and mortality salience provide us some context for understanding our supported hypothesis in that suicide risk might be greater among persons with high levels of personal need for structure because they do not engage in creative and flexible cognitive processes; moreover, they are adept in filtering what might be protective cognitions (e.g., anxiety-related) in response to death threat. Although such claims can only be verified through additional investigations, findings in the present study nonetheless point to the need for examining the role of cognitive variables such as personal need for structure when examining suicide risk.

As expected, prior psychiatric hospitalizations were also a significant psychopathological predictor of suicide attempts, consistent with previous investigations among ex-offenders (Bjork & Lindqvist, 2005; Mallett et al., 2012). International research has found suicide risk to be the most common reason for inpatient psychiatric hospital admissions (Doerfler & Moran, 2010; Oiesvold, Bakkejord, Hansen, Nivison, & Sorgaard, 2012), and prior psychiatric hospitalizations have been associated with very high post-treatment mortality rates by suicide among psychiatric patients compared with the general population (Choi, Park, Yi, & Hong, 2012). In addition, we did not observe a significant difference in terms of participants' number of prior psychiatric hospitalizations based on gender, a finding that is contrary to previous research (Gunter et al., 2012). However, the lack of a main effect and interaction effect involving gender in the present study suggests that prior psychiatric hospitalizations are a suicide risk factor for both women and men with incarceration histories who have substance use disorders.

Physical and sexual abuse histories were not significant predictors of suicide attempts in our analysis. It is possible that prior psychiatric hospitalization was a stronger predictor of suicide attempts, thereby diminishing the possible effects of abuse histories in the block of our regression model. In addition, only 17% of our sample consisted of ex-offenders who were women, and research has demonstrated extremely high rates of physical and sexual abuse histories among such women (Salina, Lesondak, Razzano, & Parenti, 2011). It is possible that the lack of women participants in the present study had a bearing on results (i.e., gender effect, effect of abuse histories among women), as abuse histories were demonstrated to predict suicide risk among women ex-offenders (Verona et al., 2005).

Likewise, substance use was not a significant predictor of our analytic model, a finding that is consistent with previous research that found symptoms of alcohol and drug use disorders were not significant predictors of suicide attempts (Swogger, Van Orden, & Conner, 2014), suicidal ideation, or suicide-related behaviors (Douglas et al., 2008). In addition, this finding is somewhat consistent with findings from a study among young offenders (Howard et al., 2003) whose suicide histories were not related to recent substance use. Findings in the present investigation extend this body research in that we examined recent substance use across all drug (including alcohol) typologies in the past 6 months and found recent substance use was not associated with suicide attempts.

The present study emphasizes the importance of examining cognitive factors among ex-offenders with substance use disorders in that we found a significant relationship between personal need for structure and suicide attempts. Personal need for structure was found to be negatively related to optimism (Ruiselova et al., 2012), and ex-offenders with suicide histories were found to have significantly lower levels of optimism (Perry & Olason, 2009). In this context, findings in the present study suggest non-psychopathological factors associated with suicide attempts have treatment implications for health care providers working with ex-offenders who have substance use disorders. For instance, assessing for rigid and inflexible cognitive processes, particularly in relation to risk behaviors and suicide risk, might better inform treatment providers when constructing treatment plans. This could provide insights into identifying treatment objectives designed to increase flexible ways of information processing, foster tolerance to ambiguous situations, and reveal possible underlying mortality concerns.

Although suicide risk might be understood when accounting for cognitive factors such as one's personal need for structure, there are some limitations in the present study. For instance, although historic suicide attempts have been examined in studies as an outcome variable, assessing for suicide risk (e.g., examining the frequency of past attempts, ascertaining the strength of motives/intentions for self-harm, in addition to the plans, methods, and degree of lethality regarding suicide ideation) and PNS levels at the time of suicide attempts were not controlled for in the present study and could have offered more insight. The predictive value of personal need for structure was examined in the context of some psychopathological variables (substance use, abuse histories, psychiatric hospitalizations), and it is possible that the use of other variables (e.g., impulsivity, aggressiveness) in future investigations will have an impact on the relationship between personal need for structure and suicidal behavior. In addition, the present study examined a sample of ex-offenders with substance use disorders, whereas comparative designs (e.g., with ex-offenders without substance use disorders, non-offenders with substance use disorders, current vs. released inmates) would help us better understand the relationship between personal need for structure and suicide for these populations. Likewise, the sample was heavily skewed toward African American men, which might limit generalizability to women and persons of other ethnicities. Finally, the use of self-reported data at one time point is another limitation of the present study, as repeated-measures design might have provided more information in relation to changes in predictor variables and future suicide attempts over time. Nonetheless, results in the present study have implications for future research, and treatment providers should consider interventions that are focused on targeting the need for personal structure among persons with substance use disorders, particularly those with incarceration histories.

Conclusion

The present study examined predictors of suicide attempts that have not been examined in previous investigations. Our investigation is innovative in that it examined personal need for structure in addition to psychopathological variables associated with suicide attempts in previous investigations. In addition, we found personal need for structure to be a significant predictor of suicide attempts after accounting for other predictors in our analytic model.

Addressing rigid and inflexible cognitive processes are treatment implications for mental health care providers working with ex-offenders who have substance use disorders. Future investigations should simultaneously investigate psychopathological and cognitive variables to better understand how cognitive processes and styles such as the need for structure might mitigate relationships between suicide and its predictors. Overall, findings in the present investigation suggest that personal need for structure should be considered in relation to suicide risk assessment, particularly among ex-offenders with substance use disorders.

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References

- Agresti, A. An introduction to categorical data analysis. Hoboken, NJ: John Wiley; 2007.
- Allison, PD. Missing data. In: Millsap, RE.; Maydeu-Olivares, A., editors. The SAGE handbook of quantitative methods in psychology. Thousand Oaks, CA: SAGE; 2009. p. 72-89.
- Belenko S, Lin J, O'Connor L, Sung H-E, Lynch KG. Sexual and physical victimization as predictors of HIV risk among felony drug offenders. *AIDS and Behavior*. 2005; 9:311–323. [PubMed: 16133904]
- Bjork T, Lindqvist P. Mortality among mentally disordered offenders: A community based follow-up study. *Criminal Behaviour and Mental Health*. 2005; 15:93–96. [PubMed: 16470503]
- Broome KM, Knight K, Hiller ML, Simpson DD. Drug treatment process indicators for probationers and prediction of recidivism. *Journal of Substance Abuse Treatment*. 1996; 13:487–491. [PubMed: 9219146]
- Cacciola JS, Alterman AI, McLellan AT, Lin Y-T, Lynch KG. Initial evidence for the reliability and validity of a “lite” version of the Addiction Severity Index. *Drug and Alcohol Dependence*. 2007; 87:297–302. [PubMed: 17045423]
- Carli V, Jovanovic K, Podlesek A, Roy A, Rihmer Z, Maggi S, Sarchiapone M. The role of impulsivity in self-mutilators, suicide ideators, and suicide attempters: A study of 1265 male incarcerated individuals. *Journal of Affective Disorders*. 2010; 123:116–122. [PubMed: 20207420]
- Choi JW, Park S, Yi KK, Hong JP. Suicide mortality of suicide attempt patients discharged from emergency room, nonsuicidal psychiatric patients discharged from emergency room, admitted suicide attempt patients, and admitted nonsuicidal psychiatric patients. *Suicide and Life-Threatening Behavior*. 2012; 42:235–243. [PubMed: 22380459]
- Coleman D, Kaplan MS, Casey JT. The social nature of male suicide: A new analytic model. *International Journal of Men's Health*. 2011; 10:240–252.
- Cook TB, Davis MS. Assessing legal strains and risk of suicide using archived court data. *Suicide and Life Threatening Behavior*. 2012; 42:495–506. [PubMed: 22906021]
- Cramer RJ, Garza MJ, Henderson CE, Ribeiro JD, Silva C, Smith AR, White J. A trait-interpersonal perspective on suicide risk in criminal offenders. *Archives of Suicide Research*. 2012; 16:334–347. [PubMed: 23137223]
- Daigle MS, Naud H. Risk of dying by suicide inside or outside prison: The short-ened lives of male offenders. *Canadian Journal of Criminology and Criminal Justice*. 2012; 54:511–528.
- DeRoma VM, Martin KM, Kessler ML. The relationship between tolerance for ambiguity and need for course structure. *Journal of Instructional Psychology*. 2003; 30:104–109.
- Doerfler LA, Moran PW. Situations associated with admission to an acute care inpatient psychiatric unit. *Psychological Services*. 2010; 7:254–265.

- Douglas KS, Lilienfeld SO, Skeem JL, Poythress NG, Edens JF, Patrick CJ. Relation of antisocial and psychopathic traits to suicide-related behavior among offenders. *Law and Human Behavior*. 2008; 32:511–525. [PubMed: 18080733]
- Fergus TA, Rowatt WC. Intolerance of uncertainty and personality: Experiential permeability is associated with difficulties tolerating uncertainty. *Personality and Individual Differences*. 2014; 58:128–131.
- Gunter TD, Arndt S, Wenman G, Allen J, Loveless P, Sieleni B, Black DW. Frequency of mental and addictive disorders among 320 men and women entering the Iowa prison system: Use of the MINI-Plus. *The Journal of the American Academy of Psychiatry and the Law*. 2008; 36:27–34. [PubMed: 18354120]
- Gunter TD, Chibnall JT, Antoniak SK, McCormick B, Black DW. Relative contributions of gender and traumatic life experience to the prediction of mental disorders in a sample of incarcerated offenders. *Behavioral Sciences & the Law*. 2012; 30:615–630. [PubMed: 22991312]
- Howard J, Lennings CJ, Copeland J. Suicidal behavior in a young offender population. *Crisis*. 2003; 24:98–104. [PubMed: 14518642]
- Jason LA, Olson BD, Harvey R. Evaluating alternative aftercare models for ex-offenders. *Journal of Drug Issue*. 2015; 45:53–68.
- Jeglic EL, Spada A, Mercado CC. An examination of suicide attempts among incarcerated sex offenders. *Sex Abuse*. 2013; 25:21–40. [PubMed: 22661392]
- Keene J. Drug use among prisoners before, during and after custody. *Addiction Research & Theory*. 1997; 4:343–353.
- Mallett C, DeRigne LA, Quinn L, Stoddard-Dare P. Discerning reported suicide attempts within a youthful offender population. *Suicide and Life-Threatening Behavior*. 2012; 42:67–77. [PubMed: 22276846]
- Marzuk PM, Hartwell N, Leon AC, Portera L. Executive functioning in depressed patients with suicidal ideation. *Acta Psychiatrica Scandinavica*. 2005; 112:294–301. [PubMed: 16156837]
- May AM, Klonsky ED. Assessing motivations for suicide attempts: Development and psychometric properties of the inventory of motivations for suicide attempts. *Suicide and Life-Threatening Behavior*. 2013; 43:532–546. [PubMed: 23725576]
- McLellan, AT.; Cacciola, JS.; Zanis, D. *The Addiction Severity Index-Lite*. Philadelphia: Center for the Studies on Addiction, University of Pennsylvania; 1997.
- McLellan AT, Kushner H, Metzger D, Peters R, Smith I, Grissom G, Argeriou M. The fifth edition of the Addiction Severity Index. *Journal of Substance Abuse Treatment*. 1992; 9:199–213. [PubMed: 1334156]
- Morrill AC, Kasten L, Urato M, Larson MJ. Abuse, addiction, and depression as pathways to sexual risk in women and men with a history of substance abuse. *Journal of Substance Abuse Treatment*. 2001; 13:169–184.
- Neuberg SL, Newsom JT. Personal need for structure: Individual difference in the desire for simpler structure. *Journal of Personality and Social Psychology*. 1993; 65:113–131.
- O’Boyle M, Brandon EAA. Suicide attempts, substance abuse, and personality. *Journal of Substance Abuse Treatment*. 1998; 15:353–356. [PubMed: 9650144]
- Oiesvold T, Bakkejord T, Hansen V, Nivison M, Sorgaard KW. Suicidality related to first-time admissions to psychiatric hospital. *Social Psychiatry and Psychiatric Epidemiology*. 2012; 47:419–425. [PubMed: 21287142]
- Perry AE, Olason DT. A new psychometric instrument assessing vulnerability to risk of suicide and self-harm behaviour in offenders: Suicide concerns for offenders in prison environment (SCOPE). *International Journal of Offender Therapy and Comparative Criminology*. 2009; 53:385–400. [PubMed: 18519741]
- Routledge C, Juhl J. The creative spark of death: The effects of mortality salience and personal need for structure on creativity. *Motivation and Emotion*. 2012; 36:478–482.
- Routledge C, Juhl J, Vess M. Mortality salience increases death-anxiety for individuals low in personal need for structure. *Motivation and Emotion*. 2013; 37:303–307.
- Ruiselova Z, Prokopcakova A, Kresanek J. Personal need for structure related to counterfactual thinking and wisdom. *Studia Psychologica*. 2012; 54:287–297.

- Ruiz MA, Douglas KS, Edens JF, Nikolova NL, Lilienfeld SO. Co-occurring mental health and substance use problems in offenders: Implications for risk assessment. *Psychological Assessment*. 2012; 24:77–87. [PubMed: 21787090]
- Salina DD, Lesondak LM, Razzano LA, Parenti BM. Addressing unmet needs in incarcerated women with co-occurring disorders. *Journal of Social Service Research*. 2011; 37:365–378.
- Steinmetz J-P, Loarer E, Houssemand C. Rigidity of attitudes and behaviors: A study on the validity of the concept. *Individual Differences Research*. 2011; 9:84–106.
- Swogger MT, Van Orden KA, Conner KR. The relationship of outwardly directed aggression to suicidal ideation and suicide attempts across two high-risk samples. *Psychology of Violence*. 2014; 4:184–195. [PubMed: 26180654]
- Swogger MT, Walsh Z, Maisto SA, Conner KR. Reactive and proactive aggression and suicide attempts among criminal offenders. *Criminal Justice and Behavior*. 2014; 41:337–344. [PubMed: 26097269]
- Verona E, Hicks BM, Patrick CJ. Psychopathy and suicidality in female offenders: Mediating influences of personality and abuse. *Journal of Consulting and Clinical Psychology*. 2005; 73:1065–1073. [PubMed: 16392980]
- Vess M, Routledge C, Landau MJ, Arndt J. The dynamics of death and meaning: The effects of death-relevant cognitions and personal need for structure on perceptions of meaning in life. *Journal of Personality and Social Psychology*. 2009; 97:728–744. [PubMed: 19785489]
- Wenzel A, Beck AT. A cognitive model of suicidal behavior: Theory and treatment. *Applied and Preventive Psychology*. 2008; 12:189–201.

Table 1

Components of the Logistic Regression Model for Suicide Attempts.

Variable	β coefficient	SE	OR	95% CI [LL, UL]
Age	.013	.032	1.013	[0.951, 1.079]
Gender	-.999	.605	0.368	[0.112, 1.206]
Ethnicity	-.957	.632	0.377	[0.109, 1.302]
Psychiatric Hospitalizations	.193	.066	1.213**	[1.067, 1.379]
PNS	.081	.038	1.084*	[1.006, 1.168]

Note. SE = standard error; OR = odds ratio; CI = confidence interval; LL = lower limit; UL = upper limit; PNS = personal need for structure.

*
p < .05.

**
p < .01.