

Predictors of Suicide Attempt Status: Acquired Capability, Ideation, and Reasons

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Abstract The present study compared Non-Attempters, Recent Attempters, and Distant Attempters on the following three constructs: Acquired capability for suicide, reasons for attempting suicide (internal perturbation based reasons vs. extrapunitive/manipulative reasons), and suicidal ideation. Participants were 40 Non-Attempters, 28 Recent Attempters, and 32 Distant Attempters at three state psychiatric hospitals. The sample consisted of 63 males and 37 females ranging in age from 18 to 63 years ($M = 35.84$, $SD = 11.44$). All patients completed the self-report measures. There were significant differences between the groups on suicidal ideation and acquired capability for suicide. The results of the present study indicate that acquired capability and reasons for attempting suicide have considerable importance for understanding suicide risk. Integration of acquired capability for suicide and reasons for attempting suicide into assessment and treatment is warranted.

Keywords Suicide risk assessment · Inpatient · Acquired capability · Reasons for attempting suicide · Suicide ideation

Predictors of Suicide Risk: Capability, Reasons, and Ideation

A completed suicide is a significant problem in inpatient psychiatric settings and is the second most common sentinel event reported to the Joint Commission [14]. Previous

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research has implicated acquired capability for suicide and internal-perturbations based reasons as important predictors of suicidal behaviors. The objective of the present study was to explore the role of these two theoretical constructs as predictors of suicide risk.

Acquired Capability for Suicide

In recent years acquired capability for suicide has become an increasingly important focus to the study of suicidality. Joiner's [13] interpersonal-psychological theory of suicidal behavior suggests that completed suicides entail the presence of three specific variables—a sense of thwarted belongingness, a sense of being a burden on others, and the acquired capability for suicide. As defined by Joiner, acquired capability for suicide involves habituation to physical pain and the fear of death through repeated exposure to painful and provocative events. According to Joiner, painful and provocative experiences diminish the fear of self-injury and cause desensitization to pain. This diminution in fear in turn weakens the basic instinct of self-preservation and enables the individual to engage in lethal self-injury. Habituation to fear and pain associated with self-injury is believed to occur through repeated self-injury or repeated exposure to painful and provocative experiences. In addition to habituation, opponent process [22] can make self-injurious or suicidal behavior reinforcing. Van Orden et al. [24] found that acquired capability for suicide was significantly predicted by painful and provocative experiences. The theoretical formulations underlying the concept of acquired capability have been supported by several studies [9, 19, 21, 24].

Reasons for Attempting Suicide

Reasons have been demonstrated to link beliefs, motives, intentions, and behaviors [25]. This may cause people who attempt suicide for different reasons to perceive, approach, and behave differently during a stressor. If certain reasons are associated with elevated suicide risk, this would inform interventions that aim to decrease suicide risk. Birtchnell and Alarcon [5] found that non-death motives were important antecedents of attempted suicide. Feeling lonely or unwanted was the most frequently reported motive (53 % of the sample). Most research studies have identified that Intrapunitive (e.g., to punish myself), and Escape/Relief (e.g., to get relief from a terrible state of mind) are more prominent reasons for engaging in suicidal behaviors than Extrapunitive (e.g., to make people sorry for the way they treated me) [1, 2, 6, 20, 23]. Holden et al. [10] studied adult psychiatric patients in crisis and found that internal perturbations based reasons significantly predicted intent to die, clinician's judgment of suicide risk, and clinician's judgment of patient's suicidal desire and preparation for suicide, even after controlling for hopelessness. Internal perturbation based reasons, independent of hopelessness, predicted explanations of suicide attempts, ideation, and self-reported probability of future suicide completions [12]. Internal perturbations based reasons were more strongly associated with suicidal actions than depression and hopelessness, whereas depression and hopelessness were more strongly linked to suicide ideation [12]. More recently, McAuliffe et al. [18] found that high suicide intent was associated with internal perturbations based reasons whereas low suicide intent was associated with extrapunitive reasons. Furthermore, multiple attempters were significantly more likely to report internal perturbations based reasons and significantly more number of motives than first time attempters. In summary, internal perturbation based reasons are thought to worsen suicide risk and show promise as a particularly useful risk factor that may be helpful in determining suicidal risk.

Present Study

The principal hypotheses concerned the relations between the different risk factors (acquired capability, reasons for attempting suicide, and suicide ideation) on one hand and attempt status (Recent Attempter, Distant Attempter, and Non-Attempter) on the other. Three specific hypotheses were examined: (1) Acquired capability for Suicide Scale (ACSS) would be a significant predictor of attempt status; (2) Recent Attempters will report greater suicidal ideation on the Beck Scale for Suicide Ideation (BSS) than Distant Attempters and Non-Attempters; and (3) Internal perturbation based reasons (INT) would be more strongly related to suicide risk than extrapunitive reasons (EXT) on the Reasons for Attempting Suicide Questionnaire (RASQ).

Method

Participants

One hundred patients were recruited from February 2009 through June 2009 from three psychiatric hospitals. The sample consisted of 63 males and 37 females ranging in age from 18 to 63 years ($M = 35.84$, $SD = 11.44$). The sample was 64 % Caucasian, 29 % African American, 4 % Hispanic, and 3 % biracial. Years of education ranged from 7 to 17 ($M = 12.11$, $SD = 1.86$). Seventy-three percent of the patients were single, 5 % were married, 16 % were divorced, and 6 % were separated. Among all 100 patients, 55 % were involuntarily civilly committed, 11 % were committed pursuant to judicial proceedings, 1 % were voluntarily admissions, 21 % were admitted by criminal courts as Not Guilty by Reason of Insanity (NGRI), and 12 % were admitted during the pretrial phase of the criminal justice process as incompetent to stand trial. Among the 33 forensic patients, 91 % were charged with a felony and 9 % with a misdemeanor.

The patient's psychiatrist assigned diagnoses following the intake interview. Of the sample, 25 % had a diagnosis of Major Depressive Disorder (MDD), 22 % were diagnosed with Schizoaffective Disorder, 21 % with Schizophrenia, 18 % with Bipolar Disorder, 11 % with Psychotic Disorder Not Otherwise Specified (NOS), 1 % with Oppositional Defiant Disorder, 1 % with Unspecified Episodic Mood Disorder, and 1 % with Impulse Control Disorder. Eighty-two percent of the patients were diagnosed with a comorbid substance abuse/dependence disorder. Personality disorder diagnosis was present in 39 % of patients, deferred in 51 % of patients, and absent in 10 %. The most common primary Axis II diagnosis was Antisocial Personality Disorder (59 %), followed by Borderline Personality Disorder (18 %) and Personality Disorder NOS (18 %); and the least common were Narcissistic Personality Disorder (2.5 %) and Paranoid Personality Disorder (2.5 %). Fourteen percent of the patients had two personality disorder diagnoses; the most common secondary personality disorder diagnosis was Borderline Personality Disorder. Axis V Global Assessment of Functioning (GAF) level at admission ranged from 10 to 65 ($M = 37.17$, $SD = 12.77$). The number of days of hospitalization ranged from 1 to 3,391 ($M = 202.89$, $SD = 570.44$).

Nonparticipants

Of the patients who participated in the study ($N = 205$) approximately 51 % were excluded. Primary reasons for exclusion included aggressive behavior or the inability to

complete the measures. The mean age of participants ($M = 35.84$, $SD = 11.44$) was significantly lower than the mean age of nonparticipants ($M = 47.02$, $SD = 12.25$), $t(203) = -6.75$, $p < .0001$. Similarly, the mean educational level of participants ($M = 12.11$, $SD = 1.86$) was significantly higher than the mean educational level of nonparticipants ($M = 8.67$, $SD = 2.23$), $t(203) = 11.97$, $p < .0001$. With regards to the duration of hospitalization, there was no significant difference between the participants ($M = 202.89$, $SD = 570.44$) and nonparticipants ($M = 140.53$, $SD = 464.70$), $t(203) = .942$, $p = .35$. Like the participants, majority of the nonparticipants were males (66 %). Sixty-seven percent of the nonparticipants were Caucasian, 31 % were African American, and 2 % were Hispanic. Of the nonparticipants, 35 % had a diagnosis of Bipolar Disorder, 30 % were diagnosed with Schizophrenia, 19 % with Major Depressive Disorder, 13 % with Schizoaffective Disorder, and 3 % with Psychotic Disorder Not Otherwise Specified. Sixty-three percent of the nonparticipants were diagnosed with a comorbid substance abuse/dependence disorder. Personality disorder diagnosis was present in 53 % of the nonparticipants, deferred in 26 % of patients, and absent in 21 %. The most common primary personality disorder diagnosis was Borderline Personality Disorder (26 %), followed by Antisocial Personality Disorder (21 %) and Personality Disorder NOS (53 %). For the nonparticipants, Axis V Global Assessment of Functioning (GAF) level at admission ranged from 10 to 65 ($M = 36.37$, $SD = 12.81$) and this was not significantly different from the participants ($M = 37.17$, $SD = 12.77$), $t(203) = .45$, $p = .66$.

Measures

Acquired Capability for Suicide Scale [4]

The ACSS consists of 20 items that assess fearlessness about lethal self-injury. Examples of items include “Things that scare most people don’t scare me” and “I can tolerate a lot more pain than most people.” Individuals respond to each item on a 1 (*not at all like me*) to 5 (*very much like me*) scale. ACSS is negatively correlated with Linehan et al. [16] Fear of Suicide subscale of the Reasons for Living Inventory ($r = -.48$, $p < .0001$; [4]). The ACSS has been found to be positively correlated with item 14 of the Beck Scale for Suicide Ideation (BSS) that asks about one’s courage to kill oneself ($r = .79$, $p = .007$; [4]). ACSS has been shown to be unrelated to the BSS ($r = .09$, $p = .35$) or the Beck Depression Inventory (BDI) ($r = -.11$, $p = .24$; [4]) and these findings are consistent with the assumption that acquired capability for suicide is distinct from current distress/depression.

Reasons for Attempting Suicide Questionnaire [10, 12]

The RASQ is a 14-item self-report structured measure designed to assess suicidal motivations. Each item is rated on a five-point scale that is scored from 1 (*disagree completely*) to 5 (*agree completely*). The RASQ consists of two subscales—internal perturbation based reasons (INT) and extrapunitive/manipulative motivations (EXT). Example of an item assessing INT includes “I have thought of or tried ending my life to punish myself.” Example of an item assessing EXT includes “I have thought of or tried ending my life because I was angry with someone and wanted to get back at him/her.” INT and EXT scores were calculated provided a patient had no more than one missing response on each of the subscales.

The psychometric adequacy of the RASQ has been supported. The alpha coefficients for the INT and EXT subscales were .80 and .71 respectively [10]. The INT subscale has been

demonstrated to predict patient's self-reported degree of wanting to die, clinicians' judgment of patient's current intent to die, and clinician's judgment of probability of suicide completion [10]. The three factors (internal perturbation based reasons, manipulative motivations, and extrapunitive motivations) identified by Holden and McLeod [11] have been found to significantly differentiate between attempters and Non-Attempters. Furthermore, scores on the internal perturbations component have been demonstrated to provide incremental validity relative to scores on scales of hopelessness [10] or depression [12].

Beck Scale for Suicide Ideation [3]

The BSS is a 21-item self-report inventory designed for the assessment of suicidal symptoms.

Procedure

This study was approved by the Institutional Review Boards and the three hospitals where data were collected. All patients were informed of the study and were invited to participate during on-unit groups or individually. The investigator explained the nature, purpose, and goals of the study, and potential risks involved in participation. To be included in the study, patients were asked to provide informed consent. For patients with guardians, consent was obtained from the legal guardians. Patients were excluded from the study if they refused to provide informed consent, were identified as having a developmental disability or dementia, were unable to complete the measures, or posed a danger to the investigator.

Patients were administered the self-report measures by the investigator (clinical psychology doctoral student). To determine if patient had attempted suicide, patient's medical record from the time of patient's admission to the survey date or until patient's discharge (whichever came first) was reviewed. To control rater biases, chart review was conducted before the patient completed the self-report measures. If a patient's score on the BSS exceeded the cut-off of 27 and/or the patient reported suicidal plans on the BSS, this information was documented in the patient's chart and the treatment team was notified. All patients that participated in the study were debriefed and were reimbursed with hygiene items worth \$1.

Results

Incidence of Suicidality

The majority of patients (60 %) had attempted suicide at least once. The number of suicide attempts ranged from a minimum of 0 to a maximum of 55 ($M = 2.22$). Among the patients with at least one suicide attempt, 41.67 % had attempted suicide in the 18-day period prior to the survey date, 5 % had attempted suicide in the 19-day to two-month period prior to the survey date: Patients that attempted suicide during the two-month period prior to the survey date constituted the Recent Attempter group. A much larger percentage of patients (53.33 %), however, attempted suicide in the 60-day to 10-year period prior to the survey date and these patients constituted the Distant Attempter group. In terms of methods of attempt, overdose/poisoning was most common (71.67 %), followed by cutting

(35 %), hanging (23.33 %), and jumping (13.33 %). The least common methods were car exhaust (3.33 %), firearm (1.67 %), and drowning (1.67 %). Review of medical records revealed that command hallucinations to engage in self-harmful or suicidal behavior were present in 7 % of the sample. Response to item 20 of the BSS that asks about previous suicide attempts was compared to information about prior suicidal behaviors derived from the patient's medical records to determine the correspondence between self-report and objective information. Eleven (18.3 %) of patients classified as attempters denied past history of suicide attempts on item 20 of the BSS. Of the 40 patients that were classified as Non-Attempters based on chart review, 6 (15 %) reported prior suicide attempts. Non-suicidal self-injury was not assessed this sample.

Differences Between Recent Attempters, Distant Attempters and Non-Attempters

Table 1 summarizes the demographic and clinical characteristics of Recent Attempters, Distant Attempters, and Non-Attempters. The three groups had fairly similar characteristics with regards to mean age, sexual orientation, marital status, mean education level, and mean Global Assessment of Functioning (GAF) score. With regards to ethnicity, 85.7 % of Recent Attempters, 59.4 % of Distant Attempters and 52.5 % of Non-Attempters were Caucasians. Forty-six percent of the Recent Attempters and 59 % of Distant Attempters were male whereas 75 % of the Non-Attempters were male. Attempters were more likely to be given a diagnosis of Bipolar Disorder and Major Depressive Disorder compared to the Non-Attempters. Schizophrenia and Schizoaffective Disorder were more common in the Non-Attempters. Substance abuse was equally prevalent in the three groups. With regards to personality disorder diagnoses, Antisocial Personality Disorder was the most common diagnosis amongst Distant Attempters and Non-Attempters. The diagnosis of Borderline Personality Disorder was more common amongst the Recent Attempters. There was a trend for Narcissistic and Paranoid Personality Disorder diagnoses to be more common in the Non-Attempter group. The inpatient mean length of stay for the Recent Attempters was the lowest, followed by Distant Attempters, and was the longest for Non-Attempters.

One-Way ANOVAs

The results of the ANOVA indicated a significant relationship between BSS and attempt status, $F(2, 97) = 19.22, p < .001$, wherein the mean score of Recent Attempters was the highest ($M = 16.36, SD = 14.24$), followed by Distant Attempters ($M = 6.81, SD = 8.75$), and was the lowest for Non-Attempters ($M = 2.10, SD = 4.16$). The Holm Stage Bonferroni procedure was conducted to determine if the means of each group are significantly different from each other. It was found that the mean of Recent Attempters was significantly different from the means of Non-Attempters and Distant Attempters. However, the means of Non-Attempters and Distant Attempters were not significantly different from each other. The results of the ANOVA indicated a significant relationship between ACSS and attempt status, $F(2, 97) = 6.13, p < .01$, wherein the mean score of Non-Attempters was the highest ($M = 49.68, SD = 15.30$), followed by Recent Attempters ($M = 49.18, SD = 15.55$), and was the lowest for Distant Attempters ($M = 37.88, SD = 415.58$). The Holm Stage Bonferroni procedure was conducted to determine if the means of each group were significantly different from each other. It was found that the mean of Distant Attempters was significantly different from the means of Non-Attempters and Recent Attempters. However, the means of Non-Attempters and Recent Attempters were not significantly different from each other. With regards to the RASQ, the mean score

Table 1 Comparison of demographic and clinical characteristics of Recent Attempters ($N = 28$), Distant Attempters ($N = 32$) and Non-Attempters ($N = 40$)

Variable	Recent	Distant	Non-Attempters
Mean age	35.96	36.28	35.40
Gender (% male)	46.4	62.5	75
Ethnicity (%)			
Caucasian	85.7	59.4	52.5
African American	10.7	28.1	42.5
Hispanic	3.6	9.4	0
Other	0	3.1	5
Marital status (%)			
Single	71.4	75	72.5
Married	7.1	6.3	2.5
Divorced	21.4	12.5	15
Separated	0	6.3	10
Sexual orientation (%)			
Heterosexual	100	90.6	100
Homosexual	0	9.4	0
Mean years of education	12.79	12.79	11.93
Axis I diagnosis (%)			
Schizophrenia	0	25	32.5
Schizoaffective	17.9	28.1	20
Bipolar disorder	28.6	15.6	12.5
Major depressive	42.9	28.1	10
Psychotic disorder NOS	3.6	3.1	22.5
Other	7.1	0	2.5
Substance abuse (%)			
Present	78.6	84.4	82.5
Axis II diagnosis (%)			
Antisocial	17.9	37.5	15
Narcissistic	0	0	2.5
Borderline	17.9	6.3	0
Paranoid	0	0	2.5
Other	7.1	9.4	5
None/deferred	57.1	46.9	75
Mean GAF	34.86	39.63	36.83
Mean days since admission	76.21	161.88	324.38
BSS	16.36	6.81	2.10
ACSS	49.18	37.88	49.68
INT	21.50	19.09	N/A
EXT	17.07	21.25	N/A

Other Axis I diagnosis included Oppositional Defiant Disorder, Unspecified Mood Disorder, and Impulse Control Disorder; Other Axis II diagnosis included Personality Disorder Not Otherwise Specified and Cluster B Traits

GAF Global Assessment of Functioning, *BSS* Beck Scale for Suicide Ideation, *ACSS* Acquired Capability for Suicide Scale, *INT* internal perturbations based reasons subscale of the RASQ, *EXT* extrapunitive/manipulative reasons subscale of the RASQ

of Recent Attempters ($M = 21.50$; $SD = .614$) was not significantly different from the mean score of Distant Attempters ($M = 19.09$, $SD = .676$), $t(58) = 1.43$, $p = .16$ (95 % CI -0.95 to 5.76) on the INT. The mean score for Recent Attempters ($M = 17.07$, $SD = 7.96$) was not significantly different from the mean score of Distant Attempters ($M = 21.25$, $SD = 9.82$), $t(58) = -1.80$, $p = .08$ (95 % CI -8.84 to $.49$) on the EXT. However, when the Recent Attempter group was revised to include only attempters that had made an attempt during the 18-day period (as opposed to 2-month period) prior to the survey date (i.e., exclusion of three patients that had attempted suicide 36, 48, and 60 days prior to the survey date), the mean score of Recent Attempters ($M = 22.68$; $SD = 5.19$) was significantly different from the mean score of Distant Attempters ($M = 19.09$, $SD = .676$), $t(55) = 2.19$, $p < .05$ (95 % CI $.31$ – 6.86) on the INT. The mean of the revised Recent Attempter group ($M = 17.04$; $SD = 8.07$) was not significantly different from the Distant Attempters ($M = 21.25$; $SD = 9.82$), $t(55) = 11.73$, $p = .09$ (95 % CI -0.07 to $.66$) on the EXT.

Regression Analyses

Multinomial logistic regression analysis with attempt status as the dependent variable was used. In the first model, ACSS, BSS, and Axis I diagnosis were used as predictors (independent variables). Table 2 shows the multinomial logistic regression analyses performed to examine the relative utility of these variables for predicting whether the patient was a Recent Attempter, Distant Attempter, or Non-Attempter. The statistic for the model ($\chi^2 = 178.24$; $df = 190$; $p = .72$; Nagelkerke $R^2 = .45$) indicated that the model did not fit very well to data. This is also demonstrated by the fact that the model predicted Non-Attempt status with 77.5 % accuracy, Recent Attempt status with 53.6 % accuracy, and Distant Attempt status with 50 % accuracy, with an overall accuracy of 62 %. Of the three independent variables, ACSS and BSS were significant predictors of Recent Attempt status and Distant Attempt status.

In the second model, INT, BSS, and Axis I Diagnosis were used as predictors (independent variables). Table 3 shows the multinomial logistic regression analyses performed to examine the relative utility of these variables for predicting whether the patient was a

Table 2 Summary of multinomial logistic regression analysis of BSS, ACSS, and Axis I Diagnosis Distinguishing Non-Attempters ($N = 40$), Recent Attempters ($N = 28$), and Distant Attempters ($N = 32$)

	B	SE	Wald	Sig.	Exp(B)	95 % CI
Recent attempters						
BSS	.19	.05	16.05	.000**	1.20	1.10–1.32
ACSS	-.04	.02	3.95	.05*	.96	.92–1.00
Axis I	.27	.23	1.42	.23	1.31	.84–2.05
Distant attempters						
BSS	.14	.05	9.51	.002**	1.15	1.05–1.26
ACSS	-.07	.02	11.39	.001**	.93	.90–.97
Axis I	-.15	.21	.53	.47	.86	.58–1.29

Reference category: Non-Attempter status

BSS Beck Scale for Suicide Ideation, ACSS Acquired Capability for Suicide Scale, Axis I Axis I Diagnosis

* $p < .05$; ** $p < .01$

Table 3 Summary of multinomial logistic regression analysis of BSS, INT, and Axis I Distinguishing Recent Attempters ($N = 28$) and Distant Attempters ($N = 32$)

	B	SE	Wald	Sig.	Exp(B)	95 % CI
Distant attempters						
BSS	−.06	.03	4.86	.03*	.94	.88–.99
INT	.03	.05	.37	.54	1.03	.93–1.14
Axis I	−.65	.28	5.38	.02*	.52	.30–.90

Reference category: Non-Attempter status

BSS Beck Scale for Suicide Ideation, INT internal perturbations based reasons subscale of the RASQ, Axis I Axis I Diagnosis

* $p < .05$; ** $p < .01$

Recent Attempter, Distant Attempter, or Non-Attempter. The statistic for the model ($\chi^2 = 57.37$; $df = 55$; $p = .439$; Nagelkerke $R^2 = .30$) indicated that the model did not fit very well to data. This is also demonstrated by the fact that the model predicted Recent Attempt status with 64.3 % accuracy and Distant Attempt status with 71.9 % accuracy, with an overall accuracy of 68.3 %. Of the three independent variables, only BSS and Axis I were significant predictors of Distant Attempt status.

Discussion

The current study is the first to evaluate the role of acquired capability and reasons for attempting suicide, in forensic and non-forensic patients in an inpatient psychiatric setting. This sample and setting were selected to address one of the biggest challenges facing clinicians and researchers in the field of suicide risk assessment—low base rate occurrence of suicidality. A history of attempted suicide was very common in this sample.

Attempters were more likely to be diagnosed with Affective Disorders whereas Non-Attempters were more likely to be diagnosed with Psychosis. The association between affective disorders and suicide risk is strong and consistent across several research studies [7, 8]. It was hypothesized that acquired capability would be a significant predictor of attempt status. Consistent with this hypothesis, Distant Attempters had significantly lower score on the ACSS compared to Recent Attempters and Non-Attempters. As predicted, Recent Attempters reported highest levels of suicide ideation. Patients who attempted suicide in the 18-day period prior to the survey date were more likely to report internal perturbation based reasons than Distant Attempters.

Implications

The results of the present study indicate that acquired capability and reasons for attempting suicide have considerable importance for understanding suicide risk. Integration of acquired capability for suicide and reasons for attempting suicide into assessment and treatment is warranted. As such, treatment of internal perturbation based reasons may be an important target for the treatment of suicidal individuals. Clinicians working with suicidal individuals should assess variables of acquired capability and internal perturbation based reasons in addition to suicidal ideation and Axis I diagnosis, to determine which ones appear most salient in individual patients.

Limitations

The findings of the present study should be interpreted in the context of several important limitations. First, information about attempt status was derived from clinical charts of the patients. There was no control with regards to the conditions of the original recording of these data. Second, patients were not followed after the survey date. Third, interrater reliability data were not available for the variables of clinician judgment of suicide risk and lethality. Fourth, reliability of self-report information warrants discussion. Previous research on the reliability of self-reported information among populations with psychosis has been mixed [15, 17].

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