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Clinical Correlates of Planned and Unplanned Suicide Attempts

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Abstract

Suicide attempters differ in the degree of planning for their suicide attempts. The purpose of this study is to identify differences between individuals who make planned (> 3 hours of planning) and unplanned (<3 hours of planning) suicide attempts. Depressed suicide attempters ($n=110$) were compared based on degree of planning of their most recent suicide attempt on demographic and clinical variables. Participants who made planned suicide attempts were more likely to have: family history of completed suicide; more severe and frequent suicidal ideation; greater trait impulsivity; and greater suicidal intent and more severe medical consequences for both their most recent and most serious suicide attempts. These results suggest clear clinical differences based on the degree of suicide attempt planning. Severe suicidal ideation, high suicide intent, family history of suicide completion, and high levels of motor impulsivity contribute to a phenotype that is at greater risk for planned, highly lethal suicide attempts.

Keywords

Suicide; Suicide, attempted; Depression

Introduction

Suicide is a major cause of death worldwide, accounting for approximately one million deaths per year (World Health Organization 2012). In the United States, the rate of nonfatal suicide attempts is much higher than the suicide rate (Borges et al., 2006; Goldsmith et al., 2002). Several risk factors that increase risk for suicidal behavior include depressed mood (Arsenault-Lapierre et al., 2004; Mann et al., 1999; Schwartz-Lifshitz et al., 2012; Yoshimasu et al., 2008); personality disorders with impulsive behavioral traits (Chesin et al., 2010; Goodman et al., 2012; Mann et al., 2008); family history of suicidal behavior (Diaconu & Turecki, 2009; Mann et al., 2008; Nock et al., 2008); adverse childhood experiences (Borges et al., 2010; Brodsky & Stanley, 2008; Bruffaerts et al., 2010; Lopez-Castroman et al., 2013; Mann et al., 2008); and a prior history of suicide attempts (Jenkins et

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al., 2002; Ruengorn et al., 2011; Suominen et al., 2004). However, suicide attempts are heterogeneous in terms of intent, degree of planning and resultant medical injury (Carballo et al., 2008) and it is likely that the risk factors will vary according to these dimensions.

A key manner in which suicide attempts differ is the degree of planning involved, ranging from unplanned attempts which are impulsive and have little to no forethought, to highly planned attempts with a great degree of preparation (Conner, 2004). An acute stressful event has been found to be an important proximal predictor of unplanned suicides, particularly in individuals with higher levels of impulsive traits (Conner et al., 2005). However, impulsive individuals do not invariably make unplanned attempts (Baca-García et al., 2001; Wyder & De Leo, 2007) and sometimes plan their attempts in advance (Conner et al., 2006; Witte et al., 2008). Further, while individuals with lower serotonin-mediated brain activity have more pronounced impulsive aggressive traits, the correlation of intent and medical damage is generally stronger with brain serotonin functional indices, they also correlate more closely with severity of aggressive behavioral traits than with impulsiveness (Mann & Malone, 1997, Mann et al., 1996).

While some studies have not found demographic differences between individuals who make planned or unplanned suicide attempts (Nakagawa et al., 2009; Spokas et al., 2012), others have found that younger age and a history of childhood neglect are associated with making unplanned suicide attempts (Conner 2004; Conner et al., 2005; Levinson et al., 2007; Zouk et al., 2006). Individuals who made planned attempts were more depressed and hopeless, and were also more likely to have a history of childhood sexual abuse, compared to those who made unplanned attempts (Baca-García et al., 2005; Conner, 2004; Spokas et al., 2012; Wei et al., 2013). A higher degree of planning of a suicide attempt is associated with greater suicidal intent and more severe medical consequences caused by the suicide attempt (Anestis et al., 2014, Baca-García et al., 2001; Baca-García et al., 2005; Conner, 2004; Grøholt et al., 2000; Witte et al., 2008) though not all studies agree (McGirr & Turecki, 2007; Spokas et al., 2012).

Aims of the Study

Identification of characteristics associated with making a certain type of suicide attempt would serve to tailor risk assessment and intervention strategies in a more targeted manner. The purpose of this study is to identify demographic and clinical characteristics that differentiate suicide attempters who make planned suicide attempts from those who make unplanned suicide attempts.

Methods

Participants

Participants ($n=110$) in this study sought treatment for a current Major Depressive Episode (MDE), scored 16 or greater on the 17-item Hamilton Depression Rating Scale (Hamilton, 1960), and made at least one suicide attempt in their lifetime. After being provided detailed information regarding study participation, all participants provided written informed consent. The study was approved by the Institutional Review Board of New York State

Psychiatric Institute. Exclusion criteria included the diagnosis of bipolar disorder, schizophrenia, current substance abuse or dependence, unstable medical illness, or neurological illness.

Instruments

All assessments were completed by trained Masters or doctoral-level psychologists. Diagnostic information for psychiatric conditions was obtained using the Structured Clinical Interview for DSM-IV Axis I (SCID-I) (First et al., 2002) and Axis II Disorders (SCID-II) (First et al., 1997). The 17-item Hamilton Depression Rating Scale (HDRS-17), a clinician-administered measure of depression symptomatology, was used to assess depression severity (Hamilton 1960). Suicidal ideation at the time of study entry was measured using the Scale for Suicide Ideation (SSI) (Beck et al., 1979). An in-depth lifetime history of suicidal behavior was collected using the Columbia Suicide History Form (Oquendo et al., 2003). A suicide attempt was defined as any form of self-harm behavior that occurred with at least some intent to die. Degree of medical damage from suicide attempt was measured using the Lethality Rating Scale (Beck et al., 1975). The participant's intent to die, degree of planning, and expectation of outcome for the most recent and most lethal suicide attempt was measured using the Suicide Intent Scale (Beck et al., 1974). Lifetime aggression was measured using the Brown-Goodwin Aggression Inventory (Brown et al., 1979). The Barratt Impulsivity Scale (BIS), a self-report measure, was used to measure impulsivity (Barratt, 1965). The BIS provides a total impulsivity score, as well as several sub-scale scores: Cognitive, Motor and Non-Planning. Hostility was measured using the Buss-Durkee Hostility Scale (Buss & Durkee, 1957). Self-reported history of physical or sexual abuse, family history of suicide, history of outpatient psychotherapy, and history of psychiatric hospitalization were rated as present or absent.

Diagnostic and suicide attempt classifications were made in a weekly consensus conference, which included senior members of the research team (MDs and PhDs). Inter-rater reliability was found to be high between the psychologists completing assessments (ICC=0.97 for Columbia Suicide History Form and ICC= 0.86 for the SCID).

Statistical Analysis

Participants were divided into two groups based on their responses to the Degree of Premeditation Item (Question 15) on the SIS, which is operationalized into three groups: impulsive, less than three hours, and greater than three hours. Participants were classified according to the reported length of time planning their most recent suicide attempt: *unplanned* if impulsive or less than three hours or *planned* if more than three hours. The most recent suicide attempt was used to minimize recall bias. The groups were compared on demographic and clinical variables using chi-square and t-tests, as appropriate. We also conducted additional analyses comparing those who made impulsive attempts to those who planned their attempts less than three hours and those who planned their attempts more than three hours separately.

Results

Demographic Characteristics

Suicide attempters whose most recent attempt was unplanned did not differ significantly from those whose most recent attempt was planned in terms of demographics (Table 1). Approximately half of both groups reported a history of childhood physical or sexual abuse. Those who planned attempts were more likely to have a family history of suicide death in a first-degree relative ($t=4.029$, $df=1$, $p=0.045$) but not of nonfatal suicide attempts ($t=2.395$, $df=1$, $p=0.122$).

Clinical Characteristics

The groups did not differ with regard to severity of current MDE, as measured by the HDRS-17. However, suicidal ideation at study entry was higher at a trend level in those who made planned attempts compared with the group that made unplanned attempts ($t=-1.880$, $df=101$, $p=0.063$). There was also a trend for participants who made planned attempts to report greater frequency of suicidal thoughts ($t=3.432$, $df=1$, $p=0.064$), as measured by item 7 of the SSI. The two groups did not differ in age of onset of first MDE or lifetime number of MDEs. The rates of comorbid borderline personality disorder and anxiety disorders were comparable in the two groups (Table 2). Further, the groups did not differ in terms of past history of a substance use disorder.

Trait Characteristics of Aggression, Impulsivity and Hostility

Lifetime Aggression History Scale and Buss-Durkee Hostility Scale scores did not differ in the two groups. Participants who made planned suicide attempts were more impulsive based on the total BIS score ($t=-2.150$, $df=71$, $p=.035$) and the Motor factor of the BIS ($t=-2.086$, $df=72$, $p=0.040$).

Suicidal Behavior Characteristics

Participants who made planned suicide attempts did not differ from their counterparts who made unplanned attempts with regard to the number of lifetime suicide attempts, as seen in Table 3. However, the medical consequences of both their most recent ($t=-2.677$, $df=105$, $p=0.009$) and most medically damaging ($t=-2.523$, $df=108$, $p=0.013$) suicide attempts were higher compared with the unplanned attempts group. Furthermore, participants who made planned attempts reported greater suicidal intent during their most recent ($t=-5.937$, $df=107$, $p<0.001$) and most medically damaging ($t=-4.235$, $df=103$, $p<0.001$) suicide attempts. Drug overdose was the most frequent method of suicide attempt for both the most recent (planned: 69%; unplanned 74%) and most serious suicide attempts (planned: 75%; unplanned: 80%). There was no statistically significant difference in frequency of this suicide attempt method between the two groups.

For the overall sample, the median number of days between the most recent suicide attempt and study participation was 123 (range: 2-11,739). The median time was 223 days for participants whose most recent attempt was impulsive ($n=43$, range: 4-11,739), 41 days for participants who planned their most recent suicide attempt less than three hours ($n=21$,

range: 6-5,871), and 80 days for those who planned their most recent suicide attempt more than three hours (n=46, range: 2-8,031).

Secondary Analyses

Exploratory analyses were conducted comparing those who did not plan their most recent suicide attempt at all to those who planned less than three hours and to those who planned more than three hours separately. Those who planned their attempt for more than three hours had greater lethality for both their most medically damaging ($F=4.296$, $df=2$, $p=.016$) and most recent suicide ($F=4.079$, $df=2$, $p=.020$) attempt. No differences were found among these three groups with regard to family history of completed suicide ($X^2=4.029$, $df=2$, $p=.133$) or suicidal ideation at study entry ($F=2.132$, $df=2$, $p=.124$). A summary of these findings are detailed in Table 4.

Discussion

We found clear differences between participants who reported that their most recent suicide attempt was planned, with at least three hours of premeditation, compared to participants who reported that their most suicide attempt was unplanned, meaning contemplated for fewer than three hours before the act. Specifically, individuals who made planned suicide attempts, compared to those with unplanned attempts, had higher levels of suicidal ideation, greater intent to die and resulted in greater lethality or medical injury. Additionally, those with planned attempts had a stronger history of family members who died by suicide. This, together with the greater lethality observed in those who made planned attempts, is consistent with studies reporting greater risk of suicide in the context of family history of suicide death (Qin et al., 2002; Runeson & Asberg, 2003). Interestingly, the two groups did not differ in terms of family history of nonfatal suicide attempt or major depression, suggesting that a family history of suicide may confer specific risk for making a highly planned and more lethal suicide attempt.

As participants with a history of planned suicide attempt endorsed greater suicidal ideation at study entry and trended toward more persistent suicidal ideation than those who made unplanned attempts, this group may be at greater risk for more lethal suicide attempts partly because of more severe thoughts of suicide, and also because of fewer periods of relief from these thoughts. Although initially counter-intuitive, consistent with previous research (Conner et al., 2006; Witte et al., 2008) impulsive participants in our sample were not more likely to make an unplanned suicide attempt. Rather, participants who made planned attempts were more likely to be impulsive, driven mostly by significantly higher scores on the Motor sub-scale of the BIS, which includes the items: "I do things without thinking;" "I find it hard to sit for long periods of time;" "I say things without thinking;" "I act on impulse;" "I act on the spur of the moment;" "I buy things on impulse;" "I walk and move fast;" "I talk fast;" "I am restless at lectures or talks," and "I am self-controlled;" which is negatively scored. They did not, however, score higher on the Cognitive or Non-Planning sub-scales. The Barratt Impulsivity Scale was originally designed to measure theoretical subtraits of impulsivity; a subsequent factor has confirmed that the scale indeed measures three distinct factors: Attentional Impulsiveness, Motor Impulsiveness, and Nonplanning

Impulsiveness (Patton & Stanford, 1995; Stanford et al., 2009). Taking this into consideration, our findings suggest that individuals who make planned and unplanned suicide attempts do not differ in their ability to tolerate suicidal thoughts. However, for those who make planned suicide attempts, it is possible that once the transition from planning an attempt to deciding to act is made, these individuals may be more likely to act quickly, consistent with their higher motor impulsivity scores.

Of particular concern, individuals who made planned suicide attempts in our sample had greater suicidal intent, during both their most recent and most lethal suicide attempts. The medical consequences of their suicide attempts were also more severe than those who made unplanned attempts, consistent with previous findings that planned suicide attempts have greater intent and higher lethality (Anestis et al., 2014; Baca-García et al., 2001; Baca-Garcia et al., 2005; Conner, 2004; Grøholt et al., 2000; Witte et al., 2008). The one-point difference on the Lethality Rating Scale found between groups in our sample is the difference between being asleep but easily aroused (score=3) and being comatose with reflexes intact (score=4) following a suicide attempt by drug overdose, a major medical injury difference. Given that the method of suicide attempt was most commonly overdose in both groups, this difference in lethality is very relevant given that method did not differ significantly between those who made planned and unplanned attempts. Therefore, the difference in lethality is attributable to the degree of planning, rather than the method of suicide. Our results suggest that severe and persistent suicidal ideation, high intent, family history of suicide, and high levels of motor impulsivity are important factors contributing to a phenotype of depressed individuals who are at particularly high risk for premeditated, higher-lethality attempts and suicide completion.

To further understand how patients who plan their suicide attempts differ from those who do not plan, an additional set of exploratory analyses were conducted comparing the three groups (those who did not plan at all vs. those who planned less than three hours vs. those who planned more than three hours) against each other. Participants who planned their most recent suicide attempt for more than three hours were found to have more significant medical consequences following both their most recent and most serious suicide attempt when compared to those who either planned their attempt for less than three hours or those who did not plan their attempts at all. In fact, the severity of medical consequence for both the most recent and most serious suicide attempts progressively increased from the impulsive group to the planned less than three hours group to the planned more than three hours group. In other words, impulsive attempts were the least lethal while planned attempts were the most medically damaging. Similar patterns were found for both suicidal ideation at study entry and family history of completed suicide; however, these findings did not reach statistical significance, most likely due to a lack of power. This provides further support that those who plan their attempts for more than three hours are a distinct and particularly at-risk phenotype of suicide attempters.

Participants in this study presented to our clinic for treatment of unipolar depression and thus findings may not be generalizable to suicide attempters who do not seek treatment after their suicide attempt (Kurz & Möller, 1984; Rudd et al., 1996). A planned suicide attempt was defined as having planned their suicide attempt for more than three hours and was based

on the operationalized definitions of the SIS. There may be clinical differences between individuals who plan their attempt for hours as opposed to days that are beyond the scope of the present study. Further, the findings in this study are limited due to the possibility of recall bias. However, to minimize this potential limitation, we focused on the participants' most recent suicide attempt which mostly occurred in the past year, and often within the past three months. Thus, the circumstances around suicide attempts reported in this study are both recent and salient. Finally, while having a family member who died by suicide was significantly associated with greater suicide planning, we note that the absolute number of such family members was quite small ($n=3$).

Conclusions

The results of this study provide evidence that individuals who make planned suicide attempts possess suicide-related clinical characteristics that are more severe and distinguish them from those who make unplanned suicide attempts. These characteristics warrant careful evaluation, early intervention and long-term follow-up by treatment providers. Targeted interventions for this specific group of suicide attempters, who appear to be at particularly high risk for suicide death, are necessary in order to further suicide prevention efforts.

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Table 1
Demographic Characteristics of Participants who Made Planned and Unplanned Suicide Attempts

<i>Demographics</i>	Participants Making Unplanned Attempts			Participants Making Planned Attempts			Analyses		
	<i>n</i>	Mean	<i>SD</i>	<i>n</i>	Mean	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>
Age (years)	64	33.25	11.287	45	32.24	9.817	0.483	07	0.630
	<i>n</i>	%		<i>n</i>	%		χ^2	<i>df</i>	<i>p</i>
White	41	68.3		33	73.3		0.309	1	0.578
Female	45	70.3		28	60.9		1.069	1	0.301
High school graduate or below	24	38.1		19	2.2		0.187	1	0.666
In a relationship (6 months or more)	12	19.0		6	13.3		0.617	1	0.432
Currently employed	21	33.9		22	48.9		2.447	1	0.118
History of completed suicide in a family member	0	0		3	7.5		4.029	1	0.045
History of attempted suicide in a family member	10	17.9		3	7.1		2.395	1	0.122
History of childhood physical or sexual abuse (before age 15)	24	53.3		16	50.0		0.083	1	0.773

Clinical Characteristics of Participants who Made Planned and Unplanned Suicide Attempts

Table 2

<i>Comorbid Diagnoses</i>	Participants Making Unplanned Attempts			Participants Making Planned Attempts			Analyses		
	<i>n</i>	%		<i>n</i>	%		χ^2	<i>df</i>	<i>p</i>
Borderline Personality Disorder	25	39.1		20	43.5		0.216	1	0.642
Any Anxiety Disorder	11	17.2		10	21.7		0.359	1	0.549
Prior History of Substance Use Disorder	34	53.1		27	58.7		0.336	1	0.562
<i>Depression Characteristics</i>	<i>n</i>	Mean	<i>SD</i>	<i>n</i>	Mean	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>
Total number of MDEs	56	9.61	22.958	41	8.24	21.100	0.299	95	0.766
Age of onset of first MDE	59	23.07	12.202	43	21.93	8.964	0.518	100	0.606
HDRS-17 Total	63	12.81	8.240	45	14.20	7.561	-0.894	106	0.373
SSI (prior)	59	17	10.629	44	21.07	11.174	-1.880	101	0.063
<i>Impulsivity and Aggression</i>	<i>n</i>	Mean	<i>SD</i>	<i>n</i>	Mean	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>
Lifetime Aggression	59	19.61	6.162	44	21.61	6.793	-1.562	101	0.121
Barratt Impulsivity Scale (BIS)	42	49.10	14.994	31	56.71	14.907	-2.150	71	0.035
BIS Cognitive Score	43	11.67	3.414	31	13.16	3.184	-1.901	72	0.061
BIS Motor Score	43	18.91	4.700	31	21.13	4.256	-2.086	72	0.040
BIS Non-planning score	43	23.47	4.852	31	25.42	4.552	-1.754	72	0.084
Buss-Durkee Hostility Scale	43	35.86	13.375	33	38.15	14.584	-0.712	74	0.479

Characteristics of Suicidal Behavior in Participants who Made Planned and Unplanned Suicide Attempts

Table 3

<i>Suicidal Behavior Characteristics</i>	Participants Making Unplanned Attempts			Participants Making Planned Attempts			Analyses		
	<i>n</i>	Mean	<i>SD</i>	<i>n</i>	Mean	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>
Number of lifetime suicide attempts	64	2.34	1.645	46	2.57	1.544	-0.714	108	0.476
Medical consequence of most recent suicide attempt	62	2.03	1.881	45	3.07	2.093	-2.677	105	0.009
Medical consequence of most serious suicide attempt	64	2.58	1.859	46	3.54	2.137	-2.523	108	0.013
Suicide Intent during most recent attempt	64	13.64	5.159	45	19.22	4.322	-5.937	107	<0.0001
Suicide intent during most serious suicide attempt	62	14.35	5.390	43	18.81	5.179	-4.235	103	<0.0001
Suicidal ideation at study entry	59	17	10.629	44	21.07	11.174	-1.880	101	0.063
Greater frequency of suicidal ideation	17	33.3		22	52.4		χ^2	<i>df</i>	<i>p</i>
							3.432	1	0.064

Table 4

Summary of Exploratory Analyses

	Participants Making an Impulsive Attempt			Participants Making an Attempt Planned <3 hours			Participants Making an Attempt Planned >3 hours			Analyses		
	<i>n</i>	Mean	<i>SD</i>	<i>n</i>	Mean	<i>SD</i>	<i>n</i>	Mean	<i>SD</i>	<i>F</i>	<i>df</i>	<i>p</i>
Medical consequence of most recent suicide attempt	41	1.85	1.74	21	2.38	2.133	45	3.07	2.093	4.079	2	0.020
Medical consequence of most serious suicide attempt	43	2.33	1.899	21	3.10	1.700	46	3.54	2.137	4.296	2	0.016
Suicidal ideation at study entry	39	16.13	10.776	29	18.70	10.393	44	21.07	11.174	2.132	2	0.124
Family history of completed suicide	<i>n</i>	%	%	<i>n</i>	%	%	<i>n</i>	%	%	χ^2	<i>df</i>	<i>P</i>
	0	0	0	0	0	0	3	6.98	6.98	4.029	2	0.133