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Perceived Reasons for Living at Index Hospitalization and Future Suicide Attempt

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Abstract

It is unclear why certain individuals choose not to engage in suicidal behavior. Although important, protective factors against suicidal behavior have seldom been studied. The Reasons for Living Inventory is a measure of putative protective factors that is inversely related to a history of suicide attempts, but its predictive utility remains relatively untested. This study sought to determine whether the Reasons for Living Inventory predicts future suicide attempts over a 2-year period. Depressed inpatients were assessed for reasons for living and were followed for 2 years. Follow-up interviews took place at 3 months, 1 year, and 2 years after discharge from the index hospitalization. Survival analysis indicates a high score on the Reasons for Living Inventory predicted fewer future suicide attempts within a 2-year period in women but not in men. Perceived reasons for living serve as protective factors against suicide attempt in women and not in men.

Keywords

Suicide attempt; protective factors; prospective

Over 30,000 people commit suicide each year in the United States (CDC, 2004). The rate of attempted suicide may be as much as 10 times higher than the rate of completed suicide (Hawton et al., 1998). Of community-residing persons, 4.6% admit to attempting suicide at least once in their lifetime (Kessler et al., 1999). The rate of attempted suicide is about 6- to 80-fold higher in persons with psychiatric disorders (Black and Winokur, 1990; Chen et al., 2000).

Prediction of suicide attempts may facilitate prevention efforts and result in the reduction of the associated morbidity and cost including medical consequences, utilization of medical services and facilities, and loss in productivity. To date, clinicians have lacked tools to reliably predict suicidal behavior.

Previous research has identified several powerful predictors of suicide attempt risk. The strongest predictor of whether individuals will attempt suicide in the future is if they have a history of attempting suicide. In fact, a history of suicide attempt has been found to increase the likelihood of a future attempt as much as 4 times (Oquendo et al., 2004; Schneider et al.,

2001). Yet, only 20%–30% of individuals who commit suicide or attempt suicide have a history of a prior suicide attempt (Mann et al., 1999).

The presence of a psychiatric disorder is another strong predictor and has been shown to increase the likelihood of an individual attempting again 2-fold. (Schneider et al., 2001; Scocco et al., 2000). However, it is estimated that at most, only 29% of individuals with psychiatric disorders attempt suicide (Chen et al., 2000). Clearly, additional indicators of risk are needed.

In the study of risk factors, the role of protective factors has been relatively ignored. Reasons for living, as reflected in the Reasons for Living Inventory (RFLI; Linehan et al., 1983), have been proposed as mitigating factors against attempting suicide. Individuals who possess the beliefs and expectations reflected in the inventory are hypothesized to be less likely to attempt suicide than those who do not. Having more reasons for living differentiates those who do not have a history of suicide attempt from those who do, despite comparable severity of psychiatric illness and recent adverse life events (Linehan et al., 1983; Mann et al., 1999). Two retrospective studies from our group have examined the individual subscales of the Inventory. Recently, Dervic et al. (2004) compared suicide attempt status at baseline by religious affiliation, and found that suicide nonattempters, as compared with attempters, endorse significantly greater reasons for living involving Responsibility toward Family, Child-Related Concerns, and Moral Objections to Suicide subscales, and more often reported a religious affiliation.

In a study examining multiple risk factors, we found that low scores on a pessimism factor that included the RFLI score predicted future suicide attempts (Oquendo et al., 2004). Given the paucity of data examining protective factors prospectively, we now examine the role of reasons for living as embodied in the RFLI in 2-year prospective study of depressed inpatients. In the current study, multiple protective and risk factors were measured, including sociodemographic and clinical variables (including age, gender, marital status, number of children, level of education, income, employment status, religious affiliation, subjective severity of depression, hopelessness, and number of previous psychiatric hospitalizations). We focused on 2 of the clinical variables that were integrated in a pessimism factor together with RFLI scores in previous work (Oquendo et al., 2004): Beck Depression Inventory and Beck Hopelessness Inventory. We hypothesized that having more reasons for living would protect against suicidal behavior prospectively, independent of the other factors assessed.

MATERIALS AND METHODS

Baseline interviews were conducted when patients were first admitted to the hospital. Patients were administered follow-up interviews at 3 months, 1 year, and 2 years after discharge from the index hospitalization. Patients presenting for evaluation and treatment of a depressive illness were screened for participation in the study. Subjects aged 18 to 75 years who met DSM-III-R criteria for a Major Depressive Episode (Major Depressive Disorder or Bipolar Disorder), as determined by the Structured Clinical Interview for the DSM-III-R (Spitzer et al., 1990), were eligible for the study. After giving written informed consent as approved by the institutional review board, 386 patients were enrolled in the study. A subset of these subjects ($n = 308$) were included in a previously published report (Oquendo et al., 2004). Thus the cross-sectional analysis in this study offers data on a larger sample, although prospective data are not available for all subjects.

Subjects were assessed for reasons for living using the RFLI (Linehan et al., 1983), which consists of 48 items. Osman et al. (1993) found α ranging from 0.79 to 0.92 for the 6

subscales, with an α of 0.89 for the RFL total score. Subjective severity of depression was measured through the Beck Depression Inventory (Beck et al., 1974). Hopelessness was measured by the Beck Hopelessness scale (Beck et al., 1961). Subjects were also assessed for suicide attempt during the 2-year follow-up period using the Columbia Suicide History Form (Oquendo et al., 2003). We did not include past suicide attempt, the strongest predictor of future suicidal behavior, in the final model to conserve the explanatory power of protective factors.

Statistical Analysis

Subjects with and without a history of suicide attempt at baseline, the strongest predictor of future suicide attempt, were compared in terms of sociodemographic and clinical characteristics. t tests and χ^2 tests were used as appropriate.

Survival analysis using a Cox Proportional Hazards Regression model was used to assess the magnitude of the effect of the reasons for living on the risk of suicide attempt during the 2 years of follow-up. A hierarchical model was built by entering the RFLI and hopelessness in step 1, sociodemographic characteristics in step 2, clinical variables in step 3, and the interaction term of gender and the total RFLI in step 4. A final trimmed model was estimated that included only those variables demonstrated to be significant in the earlier models and those deemed to be clinically important to yield a parsimonious yet comprehensive and clinically meaningful model.

RESULTS

There were no significant differences between attempters and nonattempters on gender, number of children, marital status, income level, or employment status at baseline. Past suicide attempters were younger than nonattempters ($p < 0.001$), had lower educational attainment ($p = 0.018$) and more often reported no religious affiliation ($p = 0.032$) (Table 1). Past attempters reported greater subjective severity of depression ($p < 0.001$), greater hopelessness ($p = 0.010$), and fewer perceived reasons for living as reflected in the RFLI ($p < 0.001$) than nonattempters at baseline (Table 2).

Table 3 shows the results of the Cox proportional hazard regression. The model was based on only 64% of the sample, which represents those subjects for whom there were follow-up data for at least 1 time point. Subjects who were included in the multivariate model differed from subjects that were excluded by being slightly more educated ($\chi^2 = 16.109$, $df = 1$, $p < 0.001$).

In the final model, number of prior hospitalizations (0.013, $B = 1.92$) and RFLI ($p < 0.001$, $B = 0.98$) remained as significant predictors. As the score on the RFLI increases by 1 unit, the hazard of making a suicide attempt decreases by 3.4%. Additionally, the interaction of gender and the RFLI was significantly related to the hazard of making a suicide attempt ($p = 0.048$, $B = 1.020$), indicating that RFL scores were protective for women and not for men (HR = 0.320; 95% CI = 0.170, 0.602; HR = 0.829; 95% CI = 0.413, 1.66, respectively).

DISCUSSION

These findings indicate that, among depressed women, reasons for living serve as protective mitigating factors against attempting suicide during 2-year prospective follow-up after an index major depressive episode. However, this protective effect does not seem to exist for men. This finding regarding gender differences in respect to the RFLI furthers our understanding of clinical predictors of suicide attempt identified in our previous work (Oquendo et al., 2004).

Reasons for Living

The finding that higher scores on the RFLI predicted less likelihood of a future suicide attempt, is consistent with a similar relationship reported with past suicide attempt in major depression (Malone et al., 2000) and borderline personality disorder (Linehan, et al., 1983). This finding remained when controlling for the effects of variables postulated to be connected to reasons for living including marital status, number of children, hopelessness, and severity of depression.

To our knowledge, this is the first study to focus prospectively on the protective properties of the RFLI. Prior research does suggest that individuals who receive support from family and friends are less likely to be suicide attempters than those who do not (Garlow et al., 2005; Neeleman, 2002). Our finding that higher RFLI scores are protective against future suicide attempt makes sense given the emphasis within the Inventory on relationships and connections to others.

The current study focused on the RFLI and variables highly correlated with suicidal behavior and with reasons for living, shedding light on the utility of examining protective factors. The findings suggest direct implications for clinical practice. Clinical assessment of reasons for living may be useful in the treatment of depressed individuals, especially women, who are at risk for attempting suicide. Treatment strategies may benefit from targeting the beliefs and expectations of the patient and focusing on enhancing those areas in which the patient scores low on the RFLI.

Gender and the RFLI

Our results suggest that there are gender differences with respect to the protective properties of the reasons for living. Findings indicate that women ascribe more importance to life, benefiting more from the adaptive beliefs reflected in the RFLI, than do men. It has been suggested that women tend to have less difficulty relying on others for support and are more comfortable functioning within a collective. On the other hand, men, perhaps as a result of gender role stereotypes, may be socialized to be independent, self-reliant providers and to not request help (Galdas et al., 2005; Lane and Addis, 2005). Perhaps women are able to relate more to, and benefit from, a set of beliefs and expectations that emphasizes the importance of relationships with others, and thus draw strength and protection from the factors captured by the RFLI. It is well known that women tend to attempt suicide more often but men tend to commit suicide more often (Kessler et al., 1999; Moscicki, 1994). Our findings raise the possibility that women may be more likely than men to communicate a problem or seek interpersonal support through this dysfunctional behavior while still maintaining a connection to life. For example, there is evidence indicating that women have higher rates of repeat attempts when an index attempt was of low lethality whereas as men have higher rates of repeat attempts when the initial attempt was of high lethality (Gibb et al., 2005).

Methodological Limitations

In considering the findings reported above, certain limitations should be recognized. This sample is limited to individuals with major depression and bipolar disorder and as such, the results may not generalize to individuals with other psychiatric disorders. Mood disorders, however, are most often associated with suicide attempts as compared with other psychiatric disorders (Bostwick et al., 2000). Therefore, these findings are generalizable to the large majority of persons at risk for attempting suicide.

Additionally, as previously mentioned, the survival analysis was based on only approximately 64% of the sample. Therefore, there is a concern that there may be some bias

as a result of the missing data. However, analyses were conducted comparing those who were included in the model and those who were dropped from the analyses and no differences were found between the 2 groups other than that those who were excluded were slightly less educated. Thus, it is not likely that the reduced sample resulted in skewed results.

CONCLUSION

In conclusion, treatment of depressed individuals at risk for attempting suicide may benefit from assessment of reasons for living and focus on enhancing the beliefs and expectations reflected in the Inventory. A higher score on the RFLI was shown to be predictive of fewer future suicide attempts. However, the score on the RFLI was a significant predictor of future suicide attempt only for women, suggesting that the protective properties of reasons for living differ according to gender. Given that depression occurs with twice the prevalence among women than in men (Kessler et al., 1999; Moscicki, 1994) and that the majority of suicide attempts are made by women (Kessler et al., 1999), further examination of gender differences in relation to the protective properties of the RFLI would be important to explore to further understand the clinical applicability of this measure. For example, why is it that men, who account for most suicides, do not seem to benefit from the protective effects of greater reasons for living? Clearly more work is required.

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TABLE 1

Sociodemographic Characteristics of Attempters versus Non-Attempters at Baseline

Sociodemographic Characteristic	Suicide Attempt Status			
	Attempter (N = 194)	Nonattempter (N = 184)	95% CI	p (t test or ²)
Age (yr) *	34.5 ± 10.0	37.7 ± 13.4	−7.54, −2.28	<0.001
Number of children *	0.9 ± 1.5	1.8 ± 1.3	—	0.141
Gender				0.075
Male	71 (46.4%)	82 (53.6%)	—	
Female	121 (54.5%)	101 (45.5%)	—	
% Employed	70 (51.1%)	67 (48.9%)	—	0.525
Marital status				0.100
Never married	102 (56.7%)	78 (43.3%)	—	
Currently married	44 (46.3%)	51 (53.7%)	—	
Formerly married	44 (44.9%)	54 (55.1%)	—	
Level of education				0.018
Less than high school	18 (62.1%)	11 (37.9%)	—	
High school	43 (49.4%)	44 (50.6%)	—	
Some college	66 (60.6%)	43 (39.4%)	—	
College or more	62 (42.2%)	85 (57.8%)	—	
Income level				0.057
1st quartile	34 (54.8%)	28 (45.2%)	—	
2nd quartile	46 (59.7%)	31 (40.3%)	—	
3rd quartile	34 (40.0%)	51 (60.0%)	—	
4th quartile	35 (45.5%)	42 (54.5%)	—	
Religious affiliation—no	40 (63.5%)	23 (36.5%)	—	0.032

* Values are mean ± SD.

Bivariate Analyses of Variables Predicting Future Suicide Attempt Among a Sample of Depressed Inpatients in New York and Pennsylvania, 1994–2002 at Baseline

TABLE 2

Clinical Characteristic	Suicide Attempt Status					
	Attempter		Nonattempter		<i>t</i> Test	
	Mean	SD	Mean	SD	<i>t</i>	<i>p</i>
Reasons for living inventory	140.14	45.20	174.67	41.63	−6.46	−45.04, −4.01 <0.001
Hopelessness	12.61	5.66	10.94	5.97	0.650	0.399, 2.952 0.010
Severity of depression (BDI)	30.22	11.23	25.52	11.26	3.708	2.209, 7.205 <0.001
Number of hospitalizations	1.21	0.776	0.528	0.730	8.562	— <0.001

TABLE 3

Cox Proportional Hazards Regression of Suicide Attempt Within a 2-Year Period Regressed on Total Reasons for Living Inventory, Sociodemographic Variables, Clinical Characteristics, and the Interaction of the Reasons for Living Inventory and Gender

Variable	Model With All Covariates [*]			Parsimonious Model [*]		
	Hazard Ratio	p	95% CI	Hazard Ratio	p	95% CI
Independent variables						
Total Reasons for Living Inventory	0.973	0.001	0.96, 0.99	0.98	<0.001	0.96, 0.99
Hopelessness compared with 0–4						
5–9	1.35	0.812	0.12, 15.41			
10–13	0.97	0.979	0.09, 10.45			
14–17	0.64	0.726	0.05, 8.06			
18–20	0.12	0.139	0.01, 1.99			
Sociodemographic variables						
Age	0.934	0.031	0.88, 0.99			
No. children	1.359	0.220	0.83, 2.22			
Employment status	0.257	0.040	0.07, .94			
Level of education	0.722	0.275	0.40, 1.29			
Gender (male = 1)	1.344	0.650	0.37, 4.82			
Marital status, compared with married	—	0.013				
Never married	4.327	0.098	0.76, 24.56			
Formerly married	12.392	0.004	2.21, 69.48			
Income	1.42	0.151	0.88, 2.31			
Religious affiliation	2.532	0.14	0.74, 8.67			
Clinical characteristics						
Severity of depression	1.02	0.474	0.96, 1.10			
No. hospitalizations	2.58	0.011	1.24, 5.36	1.92	0.013	1.15, 3.22
Effect modification—Reasons for Living Inventory interaction terms with:						
Gender	1.03	0.048	1.00, 1.06	1.02	0.048	1.00, 1.04

* models included only 64% of the sample reflecting those subjects for whom there was no missing data.