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Variability in Suicidal Ideation is Associated with Affective Instability in Suicide Attempters with Borderline Personality Disorder

Mina M. Rizk^{1,2}, Tse-Hwei Choo^{2,3}, Hanga Galfalvy^{2,3}, Emily Biggs^{1,2}, Beth S. Brodsky^{1,2}, Maria A. Oquendo⁴, J. John Mann^{1,2}, and Barbara Stanley^{1,2}

¹Molecular Imaging and Neuropathology Division, New York State Psychiatric Institute, New York, NY

²Department of Psychiatry, Columbia University, New York, NY

³Division of Biostatistics, New York State Psychiatric Institute, New York, NY

⁴Department of Psychiatry, Perelman School of Medicine, University of Pennsylvania, PA

Abstract

Objective: Suicidal ideation (SI) is heterogeneous with different patterns and risk factors. SI can be persistent with stable severity but may also fluctuate rapidly over a short period of time. The latter pattern is likely associated with affective instability and may consist of activation of SI at times of stress, that then subside. Although affective instability is a hallmark of borderline personality disorder (BPD), little is known about SI variability in BPD. We hypothesized that SI variability would be associated with affective instability in BPD suicide attempters.

Method: Sample included 38 females with BPD and history of suicidal behavior. SI was assessed over one week using ecological momentary assessment (EMA) at 6 epochs daily. The relationship between SI variability (i.e., change of SI from one epoch to another) and SI severity (i.e., average scores across epochs), and affective instability, assessed using the Affective Lability Scale (ALS), were examined. Possible confounding effects of depression severity and impulsiveness were tested.

Results: Participants demonstrated high ALS scores and wide range of SI variability. ALS scores predicted SI variability, even after controlling for depression severity. Although ALS also predicted SI severity, this association was driven by depression severity. ALS did not correlate with impulsiveness score.

Conclusions: Affective instability may predict SI variability in BPD suicide attempters independent of depression severity. This supports our model of suicidal subgroups with different

*Corresponding author: Mina M. Rizk, 1051 Riverside Dr., Unit 42, New York, NY 10032, mina.rizk@nyspi.columbia.edu, Tel: 646-774-7518.

Declaration of interest

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constellations of clinical aspects and risk factors. Future studies could examine these associations in larger samples and different populations to determine implications for suicide prevention.

Keywords

Affective Instability; Suicidal Ideation Variability; Ecological Momentary Assessment; Borderline Personality Disorder

1. Introduction:

The challenge in curbing rising suicide rates relates in part to the heterogeneity of suicidal ideation (SI) and behavior. Defining more homogeneous suicidal subgroups with distinct constellations of risk factors may improve the prediction and prevention of suicide.

SI can be stable with moderate severity, but may also demonstrate high degree of variability with periodic, sharp increases in SI and a relatively quick return to a state with low or no SI (Bernanke et al., 2017). Fluctuating vs. stable patterns of SI may have distinct biological underpinnings (Rizk et al., 2018) and we posit that these two SI patterns are associated with different risk factors (Bernanke, et al., 2017).

Ecological momentary assessment (EMA) allows for real-time evaluation of individuals' thoughts at several epochs (i.e., timepoints) daily (Husky et al., 2014). Hence, it can accurately assess SI variability (i.e., change of SI from epoch to epoch), providing a more granular picture of how it changes over time.

One possible contributor to SI variability is mood instability, a reliable predictor of SI in general in literature (Palmier-Claus et al., 2012). Frequent, unpredictable changes in mood can be so distressing, that suicide seems to be the only way to relieve that distress (Bowen et al., 2015). These mood changes are likely associated with fluctuating SI that is activated in times of stress and relieved in its absence, rather than a continuous or stable pattern of suicidal thinking.

In this study, we utilized EMA to assess the SI variability and average SI severity over one-week period in female suicide attempters with borderline personality disorder (BPD), a clinical diagnosis that includes an affective instability criterion. We hypothesized that affective instability would predict SI variability, but not SI severity. Due to their common association with affective instability (Harvey et al., 1989), possible confounding effects of depression and impulsiveness were examined.

2. Materials and Methods

Thirty-eight medication-free adult females with BPD, current SI and a history of lifetime suicide attempts were included. Exclusions were bipolar I, psychotic, and severe substance use disorders, and cognitive impairment. The study was approved by the New York State Psychiatric Institute Institutional Review Board.

Participants completed an assessment battery that included Structured Clinical Interview for DSM-IV (SCID), parts I and II, Affective Lability Scales (ALS) (Harvey, et al., 1989),

Columbia Suicide History Form, Beck Scale for Suicidal Ideation (SSI), Beck Depression Inventory (BDI) and Barratt Impulsiveness Scale (BIS).

EMA was conducted using a personal digital assistant. A random prompt technique generated prompts six times daily over the course of a 12-hour period during waking hours. At each prompt, participants were asked to answer questions about the time period since the last prompt on how strongly they experienced the following on a 5-point (0–4) Likert scale: a wish to live; a wish to die; a wish to escape; thoughts about dying; thoughts about suicide; urge to die by suicide; thoughts about hurting self; urges to hurt self; and whether they had reasons for living, yielding a total possible score of 0–36.

Statistical analyses were performed using the IBM SPSS Statistics Version 25.0. SI variability was measured using the root mean square of successive differences (RMSSD) of the momentary ideation total scores. The RMSSD is a reliable measure of within-subject variation of multiple quantitative measures over time, including SI variability (Witte et al., 2005). SI severity was calculated by averaging the SI scores during the EMA one-week period.

3. Results:

Participants ($N=38$; Table 1) demonstrated broad range of SI variability; RMSSD scores $=5.1 \pm 2.9$, with 25% of participants had variability lower than 3.14 and 25% had higher variability than 6.86. Linear regression models showed that ALS scores predicted EMA SI variability ($b=0.054$, $t=2.836$, $df=1, 36$, $p=0.007$) (Figure 1) and SI severity ($b=0.065$, $t=2.103$, $df=1, 36$, $p=0.043$).

ALS score correlated positively with BDI score ($r=0.468$, $p=0.001$), but not with BIS score ($r=0.321$, $p=0.074$). Therefore, we performed multiple regression models to examine if BDI score drives the relationship of ALS with SI variability or SI severity. ALS remained independently associated with SI variability ($b=0.046$, $t=2.088$, $df=2, 35$, $p=0.044$) but not with SI severity ($b=0.014$, $t=0.445$, $df=2, 35$, $p=0.659$), while controlling for BDI score.

4. Discussion:

SI variability in female suicide attempters with BPD is associated with their affective instability. This association was not driven by depression severity as it remained significant after controlling for BDI score.

While affective instability is a central feature of BPD diagnosis (Linehan, 1993), it is commonly thought that BPD is associated with chronic longstanding suicidality (Paris, 2002). However, we found that BPD is associated with a broad range of SI variability, consistent with three prospective studies of BPD patients showing that SI runs in parallel with other BPD symptoms (Peters et al., 2018; Selby and Yen, 2014; Selby et al., 2013). Moreover, weekly changes in the experience of emotion dysregulation predicted subsequent SI increases the next week (Selby, et al., 2013). Of note, the current study's participants had relatively restricted range of affective instability (i.e., high ALS scores). Hence, our finding

of the association between affective instability and SI variability is likely to apply to other groups with wider mood fluctuations variance.

Consistent with our finding, Peters, et al. (2018) recently reported that, in BPD patients, SI lability correlates positively with negative affect intensity and reactivity. SI lability in that study was assessed retrospectively over a six-month period by asking the participants about different SI parameters (e.g., frequency, duration) experienced in each week at two-month intervals. This might have not captured the more rapid momentary fluctuations of suicidal thoughts, which can occur in as short as a few hours, and may be also affected by recall bias. In the current study, we have addressed this shortcoming by using EMA which assesses SI during six timepoints daily over one week. Nevertheless, both studies are convergent on the association between affective lability and SI variability.

Sudden shifts of mood may be more difficult to cope with and are sometimes even more dysfunctional than chronic, but stable, low-mood where individuals manage to adjust over time (Palmier-Claus, et al., 2012). Low psychological well-being co-occurs with more variable, unstable negative emotions (Houben et al., 2015). Unstable mood may contribute to perceptions of uncontrollability and entrapment, both have been associated with elevated suicide risk (Taylor et al., 2011). Individuals typically experience suicidality in distinct, time-limited time periods and the intensity of SI naturally declines over prolonged periods of negative emotions (Rudd, 2006). Our finding is, therefore, particularly important because it shows how difficulties in managing emotions are related to SI fluctuations.

Some studies suggest that persistent SI does not necessarily confer greater risk for suicidal behavior but may be an indicator of elevated depressive symptoms (Witte, et al., 2005). This may explain our finding that depression severity was associated with the SI average severity but not with variability. Further, depression severity explained the association between affective instability and SI severity.

Our sample is entirely females suicide attempters with BPD, which limits generalizability to other diagnostic groups and to males. Future studies should replicate this study in individuals with different psychiatric disorders. We used a self-report tool to assess affective instability. Future studies utilizing EMA to assess fluctuation in both mood and suicidal thinking would be instructive.

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References

- Bernanke JA, Stanley BH, & Oquendo MA (2017). Toward fine-grained phenotyping of suicidal behavior: the role of suicidal subtypes. *Mol Psychiatry*, 22(8), pp. 1080–1081. [PubMed: 28607457]
- Bowen R, Balbuena L, Peters EM, Leuschen-Mewis C, & Baetz M (2015). The Relationship between Mood Instability and Suicidal Thoughts. *Arch Suicide Res*, 19(2), pp. 161–171. [PubMed: 25774548]
- Harvey PD, Greenberg BR, & Serper MR (1989). The affective lability scales: development, reliability, and validity. *J Clin Psychol*, 45(5), pp. 786–793. [PubMed: 2808736]

- Houben M, Van Den Noortgate W, & Kuppens P (2015). The relation between short-term emotion dynamics and psychological well-being: A meta-analysis. *Psychol Bull*, 141(4), pp. 901–930. [PubMed: 25822133]
- Husky M, Olie E, Guillaume S, Genty C, Swendsen J, & Courtet P (2014). Feasibility and validity of ecological momentary assessment in the investigation of suicide risk. *Psychiatry Res*, 220(1–2), pp. 564–570. [PubMed: 25155939]
- Linehan MM (1993). *Cognitive-behavioral treatment of borderline personality disorder*: Guilford Publications.
- Palmier-Claus JE, Taylor PJ, Varese F, & Pratt D (2012). Does unstable mood increase risk of suicide? Theory, research and practice. *J Affect Disord*, 143(1–3), pp. 5–15. [PubMed: 22842024]
- Paris J (2002). Chronic suicidality among patients with borderline personality disorder. *Psychiatr Serv*, 53(6), pp. 738–742. [PubMed: 12045312]
- Peters JR, Mereish EH, Solomon JB, Spirito AS, & Yen S (2018). Suicide Ideation in Adolescents Following Inpatient Hospitalization: Examination of Intensity and Lability Over 6 Months. *Suicide Life Threat Behav*, 0(0)
- Rizk MM, Galfalvy H, Singh T, Keilp JG, Sublette ME, Oquendo MA,...Stanley B. (2018). Toward subtyping of suicidality: Brief suicidal ideation is associated with greater stress response. *J Affect Disord*, 230, pp. 87–92. [PubMed: 29407544]
- Rudd MD (2006). Fluid Vulnerability Theory: A Cognitive Approach to Understanding the Process of Acute and Chronic Suicide Risk Cognition and suicide: Theory, research, and therapy (pp. 355–368).
- Selby EA, & Yen S (2014). Six-month trajectory of suicidal ideation in adolescents with borderline personality disorder. *Suicide Life Threat Behav*, 44(1), pp. 89–100. [PubMed: 24112120]
- Selby EA, Yen S, & Spirito A (2013). Time varying prediction of thoughts of death and suicidal ideation in adolescents: weekly ratings over 6-month follow-up. *J Clin Child Adolesc Psychol*, 42(4), pp. 481–495. [PubMed: 23148530]
- Taylor PJ, Gooding PA, Wood AM, Johnson J, & Tarrier N (2011). Prospective predictors of suicidality: defeat and entrapment lead to changes in suicidal ideation over time. *Suicide Life Threat Behav*, 41(3), pp. 297–306. [PubMed: 21463354]
- Witte TK, Fitzpatrick KK, Joiner TE Jr., & Schmidt NB (2005). Variability in suicidal ideation: a better predictor of suicide attempts than intensity or duration of ideation? *J Affect Disord*, 88(2), pp. 131–136. [PubMed: 16054227]

Figure 1.
Plot of affective liability scale score and suicidal ideation variability as measured by root square of mean successive differences.

Table 1:

Demographic and Clinical Characteristics of Study Participants (N=38):

	Mean (SD)	Range
Age (years)	28.6 (9.5)	18–59
Education (years)	15.4 (2.0)	11–21
Affective Lability Scale	74.3 (22.8)	20–114
Beck Depression Inventory	28.4 (11.7)	7–50
Barratt Impulsiveness Scale	75.7 (13.4)	43–107
Beck Scale for Suicidal Ideation	10.6 (8.9)	0–34
	Number	%
Sex; Female	38	100
Race; White	23	60.5
Ethnicity; Hispanic	12	31.6
Current Axis I diagnosis		
• Major depressive disorder	30	79.0
• Depression Not Otherwise Specified	1	2.6
• Bipolar Disorder Not Otherwise Specified	28	73.7
• Any Anxiety Disorder		
Lifetime Axis I diagnosis		
• Major depressive disorder	35	92.1
• Depression Not Otherwise Specified	1	2.6
• Bipolar Disorder Not Otherwise Specified	1	2.6
• Any anxiety disorders	30	79.0
Comorbid Axis II Diagnosis		
• Antisocial Personality Disorder	2	5.3
• Paranoid Personality Disorder	5	13.2
• Avoidant Personality Disorder	7	18.4
• Obsessive-Compulsive Personality Disorder	7	18.4
History of at least one actual suicide attempt	38	100