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Highly variable suicidal ideation: a phenotypic marker for stress induced suicide risk

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Abstract

Suicidal behavior (SB) can be impulsive or methodical; violent or not; follow a stressor or no obvious precipitant. This study tested whether childhood trauma, affective lability, and aggressive and impulsive traits predicted greater SI variability. We also assessed whether affective lability, aggressive or impulsive traits explain childhood trauma's effects on SI variability and whether those with highly variable SI respond to stressful events with increases in SI. Finally, we assessed variable SI's trajectory over 2 years. Depressed participants (n=51) had ecological momentary assessments (EMA) over 7 days at baseline, 3, 6, 12, 18, and 24-months. SI variability was assessed using the square Root of the Mean Square of Successive Deviations. Mixed Effects Models were fit as appropriate. Childhood trauma was associated with subsequent aggression. Physical abuse predicted both aggression and affective lability as well as SI variability, but not impulsivity. In two-predictor models, physical abuse's effect on SI variability was no longer significant, when controlling for the effect of higher aggression and impulsivity. Those with high SI variability exhibited greater increases in SI after stressors compared to those with less variability. We did not find that SI variability changed over time, suggesting it might be trait-like, at least over two-years. Variable SI predisposes to marked SI increases after stressful events and may be a trait increasing risk for impulsive SB, at least over 2 years.

Introduction:

The US suicide rate rose from 10.5 to 14.0 per 100,000 between 1999 and 2017, an increase of 33%¹. The cause for this increase is unknown. However, it is clear that more robust approaches to identification of those at risk are essential. The search for predictors

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of suicidal behavior and the recognition of suicidal subtypes has spanned more than a century, going as far back as Durkheim, yet clinical identification remains an imprecise science. One possible contributor to poor prediction may be the assumption that suicidal behavior (SB) is a homogeneous outcome. Yet, SB is complex and heterogeneous, not only in terms of methods employed, but also in the processes that lead to it. It can be impulsive, or methodically planned; violent or not; reactive to stress or independent of any obvious stressful events.

Whether heterogeneous manifestations of SB are associated with different patterns of suicidal ideation (SI) is not known. A handful of studies has examined longitudinal patterns of SI²⁻⁴ and we⁵ and others⁴ have identified different patterns of SI, with variability serving as a key parameter. Of note, whether there are specific antecedents of variable SI and whether variable SI is a trait or state phenomenon are unanswered questions³.

We recently posited 2 subtypes of SB associated with different patterns of SI. We described a phenotype in which SI that fluctuates widely over short time periods leads to impulsive SB, typically in response to stressful events. In contrast, when SI is elevated with little fluctuation, it may be linked to blunted serotonergic function, greater cognitive control and more planned, lethal SB.

In this study, we sought to test four hypotheses: (a) *A history of childhood trauma will be associated with greater affective lability and aggressive and impulsive traits and all 4 variables will predict SI variability over a 2 year time period*; (b) Affective lability, aggressive and impulsive behaviors subsequent to childhood trauma will lead to future SI variability over a 2-year time period; (c) Those with more variable SI at baseline will have greater increases in SI after stressful events reported using EMA at subsequent time points than those with less variability (d) SI variability's trajectory will be explored over a 2-year follow-up time period.

METHODS

Participants with Major Depressive Disorder (n=51) were respondents to advertisements or recruited from the emergency department, and provided written informed consent as approved by the New York State Psychiatric Institute (NYSPI) Institutional Review Board. Patients were evaluated by research psychologists with at least a Masters' level degree. Diagnoses were generated based on the Structured Clinical Interview for DSM IV (SCID), medical record review, and collateral information during a consensus conference with input from senior research psychiatrists and psychologists. Patients were administered the 17-item Hamilton Depression Rating Scale (HDRS), the Beck Depression Inventory (BDI), the Affective Lability Scale (ALS), the Barratt Impulsivity Scale (BIS), the Brown Goodwin Lifetime History of Aggression Scale (BGLHA), and the Childhood Trauma Questionnaire (CTQ). Data on different domains of childhood trauma were available as CTQ sub-scores for emotional abuse, physical abuse, sexual abuse, emotional neglect and physical neglect. Past suicidal behavior was evaluated using the Columbia Suicide History Form.

Participants were included if they had at least some follow up EMA data. They received psychiatric care in the community or at the NYSPI Molecular Imaging and Neuropathology Division's research clinic and were followed for two years. Participants used their own smart phone for ecological momentary assessment (EMA) at six different timepoints: baseline and at 3, 6, 12, 18, and 24-month follow-up evaluations. Unlike traditional clinical rating scales which collect information retrospectively, EMA permits assessment of participants in their environment and in real time. At each timepoint, participants provided information about suicidal ideation (SI) and stressful events in response to prompts 6 times a day, for 7 consecutive days. Each day, prompts were randomly scheduled within a 2-hour band of time, excluding times when the participant would ordinarily be sleeping. On this EMA scale, nine questions about SI were scored 0–4 allowing for a range of 0–36 for the SI score. The gateway question for the SI items was “Since the last prompt, how strongly have you felt or experienced the following”. Examples of SI prompts were “Thoughts about dying?” and “Thoughts about killing yourself (suicidal thoughts)?”. Eight questions about stressful events were scored yes/no. The gateway question for the stressful events was “Please indicate if any of the following events occurred since the last prompt”. Examples of stressful events prompts were “Had a disagreement with someone?” and “Received bad news?”

Data Analysis

Psychometric properties of the ideation scale from the EMA data were analyzed first using a cross-sectional approach, including Cronbach's alpha, and then in a longitudinal manner following the recommendations of Shrout and Lane⁶, based on Generalizability Theory which has been applied in studies with high-frequency of mood measures. Analyses were informed by the facts that: (1) prompts occurred randomly, with observation time nested within subject, and (2) there were unequal numbers of observations per subject. Briefly, analysis of the internal consistency of the scales over time was performed using random effect models to separate the proportion of variability explained by between-subject variation (subject effect), which measures the difference between subjects in their SI ratings over all timepoints and items; by the variance due to the time nested within subject component (subject-by-time interaction); and by the error variation, which is identical to the subject by time by item interaction. Then, the between-person reliability, R_{KRN} , is defined as the variance of the subject effect divided by the sum of: itself, the variance of the time effect nested within subject, divided by the number of subject-level observations, and the error (residual) variance, divided by the product of the number of person-level observations and the number of items. The reliability of change in SI from time to time, R_{CN} , is defined as the variance of the time nested within subject component divided by the sum of itself and the error (residual) variance, divided by the number of items.

For the rest of the study, at each of the six one-week time periods, within-subject SI variability was defined as the square root of the Mean Successive Squared Deviations (RMSSD) of the total SI score at each prompt. RMSSD is a standard approach in medicine, long used to calculate variability in a time series for measures such as heart rate variability derived from longitudinal heart rate data. RMSSD was only calculated for participants at

timepoints with at least 10 answered prompts. Participants were classified as having high or low variability in SI based on the median split.

Hypothesis (a): A history of childhood trauma will be associated with greater affective lability and aggressive and impulsive traits and all 4 variables will predict SI variability over a 2 year time period.—Relationships between self-reported childhood trauma and affective lability, aggression, and impulsivity were tested using Spearman’s Rho. Mixed effect models were fit to model SI variability as the outcome with subject-specific random intercepts, an AR(1) correlation structure for within-subject observations, and timepoint as a categorical variable fixed effect. Effects of childhood trauma, affective lability, lifetime aggression, and impulsivity on SI variability were assessed by individually adding baseline CTQ and its subscales [emotional abuse, physical abuse, and physical neglect], affective lability, and aggression scores, respectively, as fixed effects, to individual models.

Hypothesis (b): Affective lability, aggressive and impulsive traits will explain the effects of childhood trauma on SI variability over a 2-year time period.—Baseline variables that were significant predictors of SI variability individually at least at a trend level ($p < 0.1$) were added separately as independent variables to the mixed effect models, together with self-reported childhood trauma, to determine whether childhood trauma’s effect on SI variability was explained, in turn, by higher affective lability, lifetime aggression, or impulsivity.

Models with more than 2 predictors were not fit, since the minimal detectable effect size for a predictor of interest (childhood trauma) and an outcome (SI variability) in a two-predictor, single-time point model, calculated a priori using G*Power 3.1, was $f^2 = 0.13$ (corresponding to a partial correlation coefficient of $r = 0.34$). For the repeated measures model of SI variability, with 6 time points and with high within-subject correlation of $r = 0.80$, the minimal detectable effect size, calculated with the “longpower” library in R, would be $d = 0.80$, equivalent to $r = 0.37$.

Hypothesis (c) Those with more variable SI at baseline would have greater increases in SI after stressful events reported using EMA at subsequent time points, than those with less variability.—We fit mixed effect models with longitudinally measured EMA SI severity measures at all follow-up timepoints as the outcome. Fixed-effect predictors for the model were the time-varying stressful events indicator (yes/no), baseline SI variability, and their interactions. SI score at the time of the previous prompt and timepoint (as a categorical variable) were additional covariates. The model also featured subject-specific random intercepts, an AR(1) correlation structure for within-subject observations.

Exploratory Analysis (d): Examining time-trends in the variability of SI as measured by EMA over a 2 year follow-up time period.—Participants were categorized as having high or low SI variability based on the RMSSD median split at the time of baseline EMA. To assess whether the SI variability changed over time, mixed effect models were fit across time points, with time point as the only fixed effect, a random

intercept for subject, and an AR(1) correlation structure for within-subject observations; the (categorical) time effect was tested for significance.

We did not correct for multiple testing in either the single-predictor or two-predictor models, due to the limited sample size.

RESULTS

Participants were aged 37.3 ± 11.2 years; 59% were female. Patients were moderately depressed as measured by the Hamilton Depression Score and the Beck Depression Inventory. Ten of the participants (20.4%) were diagnosed as having Borderline Personality Disorder (BPD). Thirty-five percent (35%) of the patients had a history of at least one suicide attempt. Forty-six percent (46%) reported childhood trauma. The high SI variability group had significantly greater mean ideation at baseline, compared to the low SI variability group (High Mean (SD) = 10.26 (5.24), Low Mean (SD) = 4.56 (3.85), $t(49) = -4.41$, $p < .0001$). Clinical characteristics of the participants are displayed in Table 1.

The EMA SI dataset comprised responses to 6001 prompts (average=118 per subject). For the 9 SI items average, inter-item correlations between the SI items ranged between Spearman's $Rho = 0.40$ to 0.47 , while the range of correlations between items and the total SI score (sum of 9 SI items) ranged between Spearman's $Rho = 0.62$ to 0.75 . Had the data come from a cross-sectional design, the standardized Cronbach's alpha value would be 0.87 , indicating good internal consistency. The estimate of reliability of between-subject differences on the ideation scale items, averaged over time in the EMA context, was $R = 0.99$, while the reliability of within-subject change in ideation over time was $R = 0.69$.

Mean EMA SI severity during the entire follow up period was $m = 6.05$ ($SD = 5.95$, range: 0–36). As expected, SI severity was lower during the follow-up period than at baseline (baseline: $m = 7.62$, $SE = 0.70$; 3 months: $m = 5.40$, $SE = 0.80$; 6 months: $m = 5.44$, $SE = 0.78$; 1 year: $m = 5.24$, $SE = 0.80$; 18 months: $m = 5.59$, $SE = 0.81$; 2 years: $m = 5.53$, $SE = 0.88$; $F = 4.03$, $df = 5, 137$, $p = 0.002$). Sufficient EMA data (at least 10 prompts) were collected to calculate SI RMSSD to measure SI variability for 50 participants at baseline (98%). Data at each subsequent time period were available for 45–65% of the sample. For these repeated RMSSD values, 39% of the variance was within-subject time point to time point differences, and 61% was for between-subject variability. Participants were presented with 42 prompts during each 1-week period (6/day) and answered 31.22 (74.3%) on average. Within each episode, the number of answered prompts was not significantly related to subjects' ideation average or ideation RMSSD (both $p > .05$). Furthermore, the length of time between subsequent prompts was not a significant predictor of ideation change.

(a) Relationships between childhood trauma and aggression, impulsivity and affective lability and their predictive capacity for greater SI variability during the two-year follow-up.

As hypothesized, self-reported childhood trauma was associated with lifetime aggression (Spearman's $Rho = 0.427$, 95% CI = (0.156, 0.638), $p = 0.003$). However, it was not associated with impulsivity (Spearman $Rho = 0.156$, 95% CI = (-0.130, 0.418), $p = 0.301$) or affective lability (Spearman's $Rho = 0.120$, 95% CI = (-0.165, 0.386), $p = 0.451$). Similarly, CTQ

subscales for emotional abuse, physical abuse, and physical neglect were all also significantly associated with lifetime aggression (all Spearman's $Rho > 0.310$, all $p < .04$). None of the subscales were significantly associated with impulsivity (all Spearman's $Rho < 0.19$, all $p > 0.2$), and only physical abuse was significantly associated with affective lability (Spearman's $Rho = 0.301$, 95% CI = (0.018, 0.539), $p = 0.047$).

While the CTQ total score did not reach statistical significance as a predictor of SI variability ($B = 0.02$; $SE = 0.01$; $df = 123$; $t = 1.72$; $p = 0.089$), higher scores on the childhood physical abuse subscale predicted SI variability ($B = 0.07$; $SE = 0.03$, $df = 127$; $t = 2.06$; $p = 0.042$) as did greater impulsivity and aggression scores ($B = 0.03$; $SE = 0.01$; $df = 124$; $t = 2.49$; $p = 0.0143$ and $B = 0.09$; $SE = 0.03$; $df = 134$; $t = 2.71$; $p = 0.008$, respectively). Greater affective lability tended to predict SI variability ($B = 0.01$; $SE = 0.01$; $df = 116$; $t = 1.85$; $p = 0.0672$). See Table 2. Of note, the physical abuse and physical neglect subscales scores predicted mean SI scores during follow up ($p < 0.046$ and $p < 0.010$, respectively), but the sexual abuse and emotional neglect subscales did not ($p < 0.401$, and $p < 0.119$, respectively). The total CTQ score and the emotional abuse subscale score predicted mean SI scores during the follow up, but only at a trend level ($p < 0.051$ and $p < 0.081$, respectively).

(b) Two-predictor models of SI variability

In pre-planned models that included both physical abuse and an additional covariate (affective lability, aggression, and impulsivity) as predictors of SI variability, we found that physical abuse was no longer a significant predictor ($B = 0.04$; $SE = 0.04$; $df = 124$; $t = 1.09$; $p = 0.279$) when controlling for lifetime aggression, while lifetime aggression did not reach statistical significance ($B = 0.07$; $SE = 0.04$; $df = 124$; $t = 1.91$; $p = 0.059$). The same was true for physical abuse ($B = 0.05$; $SE = 0.03$; $df = 124$; $t = 1.44$; $p = 0.153$) and impulsivity ($B = 0.02$; $SE = 0.01$; $df = 124$; $t = 1.93$; $p = 0.055$). However, in the third model, SI variability was not predicted by either physical abuse ($B = 0.05$; $SE = 0.03$; $df = 116$; $t = 1.56$; $p = 0.121$) or affective lability ($B = 0.01$; $SE = 0.01$; $df = 116$; $t = 1.19$; $p = 0.238$).

(c) Effects of future stressful events on SI among those prone to variable SI

Overall, negative life-events were reported for 27% of prompts. There was a significant interaction between the time-varying stressful events indicator (yes/no) and the baseline SI variability measure (RMSSD) (interaction $b = 0.25$, $SE = 0.06$, $t = 4.02$, $df = 3319$, $p < 0.0001$) with respect to their effects on SI severity. That is, participants with higher baseline SI variability had greater increases in SI in response to stressful events at subsequent timepoints, than participants with less baseline SI variability. This was the case even after adjusting for SI severity at the previous prompt or for SI variability at baseline.

(d) SI Variability as measured by EMA over time

Within-subject SI variability did not change significantly over the two-year period of observation ($F = 1.48$, $df = 5, 137$, $p = 0.200$). When dividing the sample by SI variability at baseline (high vs low, median split), there also was no change over time observed for the follow-up time points, regardless of whether individuals were categorized as having high SI variability at baseline ($N = 26$; $F = 1.04$, $df = 5, 75$, $p = 0.401$) or not ($N = 25$; $F = 0.57$, $df = 5, 63$, $p = 0.721$) (see Figure 1). We note that across time points, past suicide attempters

and non-attempters had comparable variability of SI (time*attempt: $p=0.826$, attempt main effect: $p=0.843$).

DISCUSSION

Among patients with MDD, we found that self-reported childhood trauma was only significantly associated with greater subsequent lifetime aggression, and that only one subcategory of trauma, physical abuse, predicted both later aggression and affective lability. Moreover, physical abuse predicted SI variability, and exploratory analyses suggested that the effect of physical abuse on SI variability was explained away by higher aggression and impulsivity, but not affective lability. SI variability did not change over time, persisting over a two-year period, and those with high SI variability exhibited greater increases in SI after stressful events compared to those with less variable SI.

Our model sought to identify antecedents of risk for stress-sensitive, highly variable SI: childhood trauma, aggression, impulsivity and affective lability. The deleterious consequences of childhood trauma are long ranging and have been well documented. Childhood trauma predicts mood disorders⁷, suicidal behavior⁸, and increased mortality later in life⁹. Studies examining the impact of childhood trauma on aggression and impulsivity are less plentiful, though convergent^{8, 10}. In a study of 851 students employing the CTQ, childhood trauma was found to predict aggressive behavior, with the physical abuse subscale showing a robust association, as found in the current study¹¹. Other studies suggest that the link between childhood trauma and later aggression is specific to reactive, rather than proactive aggression¹² and that this effect may be mediated through inflammatory processes¹³. In prospective familial studies, impulsive aggression predisposes adolescents to the development of mood and anxiety disorders, which increases risk for suicidal behavior and ideation¹⁴. Childhood trauma also has been linked to later impulsivity¹⁰, as well as affective lability¹⁵, with some studies suggesting that difficulties in emotion regulation lead to impulsivity¹⁵. In our sample, only aggression, and not impulsivity or affective lability, was associated with total CTQ scores. That the CTQ physical abuse subscale predicted both later aggression and affective lability, may be related to the strong effects of physical abuse reported in some¹¹ but not all studies^{16, 17}. Confirmation in a larger sample would be instructive.

While links between physical abuse and the presence of suicidal ideation have been noted¹⁸, very few studies have examined longitudinal patterns of suicidal ideation^{2, 19–21} and are mostly descriptive of the trajectories of SI, rather than focused on its predictors. We have found that in suicide attempters with borderline personality disorder, affective lability predicts SI variability²¹. One study noted that temporal variability in severity of depression does not have an impact on SI variability², perhaps owing to the study's low statistical power, but there are reports²² of aggression mediating the link between childhood trauma and suicidal behavior. That aggression and impulsivity may mediate the effects of physical childhood trauma on subsequent SI variability comports with our model positing high-variability SI as a specific phenotype². Analyses of the effects on SI variability of biological parameters such as cortisol response to stressful events and neural engagement during tasks requiring emotional distancing are underway.

We found that those with more SI variability at baseline responded with higher SI scores after a stressful event. This, too, is in line with our model which posits two subtypes of suicidal ideation, one that is stress responsive and another that is not. Together with the observation in this study that SI variability may behave in a trait-like manner, these findings indicate that there are at least two subtypes of suicidal individuals. One suicidal subtype has variable SI with strong increments in SI when exposed to stressful events. The other subtype has SI that is more constant and is less stress-sensitive. These observations are consonant with those we reported based on a different sample²³, in which there were suicide attempts that arose in response to life events and other attempts that were apparently precipitated by a recurrence of depression. In that study, we did not see an increase in risk for individuals who experienced life events in the context of being depressed, suggesting that there are at least two different pathways to suicide attempts, one of which was related to the occurrence of stressful events. Similarly, in a study of adolescents²⁴, the transition from SI to suicide attempt was linked to occurrence of stressful events, but not depression or other psychopathological risk factors, also supporting the notion of different pathways for suicide risk.

Our finding that SI variability did not change over a two-year period, behaving in a trait-like manner, comports with a 9-year follow up study that assessed participants with a self-report scale at 6 time points and documented that within-subject variability for SI was lower than for several other depressive symptoms²⁵. Another study using EMA to assess SI noted that there was significant within person variability in SI, although subtypes of variability were not assessed²⁶. Whether SI variability is a state or a trait has clinical implications. Importantly, if it is a trait, then interventions providing individuals with steps to take as they are faced with impulsive urges to attempt suicide such as safety planning²⁷, or treatments that target development of emotion regulation strategies such as dialectical behavioral therapy²⁸, may be life-saving. For those with more sustained SI, cognitive therapy for suicide²⁹ which targets maladaptive cognitions would be more appropriate. We do not have data beyond two years to ascertain the robustness of this “trait-like” characteristic. Nonetheless, given that the 2 years after hospitalization or suicide attempt are the highest risk period for suicidal behavior³⁰, the current data is consistent with the notion that clinical treatments specific to the subtype of suicidal ideation may be effective anti-suicidal interventions.

LIMITATIONS

The sample was limited to individuals with mood disorders and testing in other patient populations would be useful. While the sample size is not large, it is one of the larger samples with longitudinal EMA data that includes 7-day epochs collected at 6 time points over a 2-year period. Nonetheless, power was limited to test models with more than two predictor variables, and some non-significant findings may be due to limited precision or type 2 error. As well, we did not adjust for multiple comparisons.

CONCLUSIONS

More severe childhood physical abuse, aggression, and impulsivity predicted greater SI variability and difficulties with emotion regulation expressed as affective lability tended to be predictive as well. Childhood physical abuse appears to lead to aggression and impulsivity, which in turn predict suicidal behavior, an exploratory finding that should be replicated. The propensity for SI variability among depressed individuals may be a trait, at least over 2 years, and predispose individuals to marked increases in SI after stressful events. Ongoing studies are assessing Hypothalamic-Pituitary-Adrenal Axis responsivity and orbital prefrontal cortex function during emotion regulation and their relationship to SI variability.

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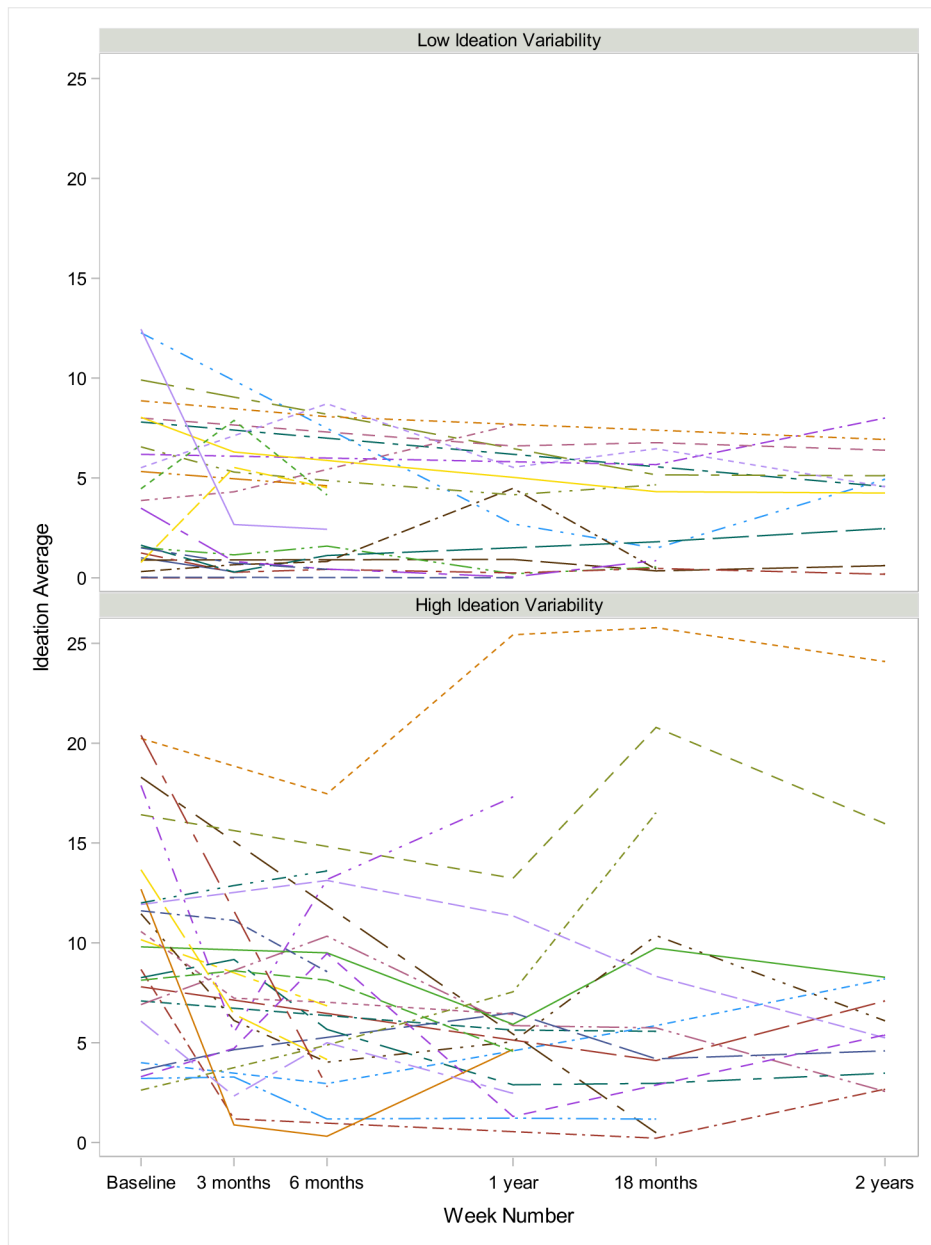


Figure 1. Spaghetti Plot of Trajectories of Suicidal Ideation over a 2 year period divided by median split of RMSSD

Table 1:

Baseline Clinical Characteristics (n=51)

Variable Name	n	%
Sex		
Male	19	38.0%
Female	29	58.0%
Trans: Female to Male	2	4.0%
Ethnicity		
Hispanic	12	24.5%
Not Hispanic	37	75.5%
BPD		
No BPD	39	79.6%
BPD	10	20.4%
Lifetime MDD		
Yes	50	100.0%
History of Suicide Attempt		
Yes	18	35.3%
No	33	64.7%
Variable Name (range)	n	Mean (SD)
Age (19–61)	49	37.6 (11.3)
Years of Education (11–25)	49	15.6 (2.6)
17-item Hamilton Depression Scale* (1–29)	50	16.0 (5.9)
Beck Depression Inventory (3–42)	50	22.1 (9.3)
Affective Lability Scale (27–129)	44	69.8 (25.7)
Emotional Abuse Score from CTQ (5–25)	48	12.6 (5.5)
Physical Abuse Score from CTQ (5–25)	48	9.6 (5.7)
Sexual Abuse Score from CTQ (5–21)	48	8.7 (5.2)
Emotional Neglect Score from CTQ (5–24)	47	13.4 (5.1)
Physical Neglect Score from CTQ (5–15)	47	7.7 (2.6)
CTQ Total Score (25–91)	46	51.6 (17.9)
Barratt Impulsivity Score (20–87)	47	51.7 (17.5)
Brown Goodwin Lifetime Aggression Score (10–33)	50	17.0 (5.4)
Hopelessness Score (0–20)	50	11.2 (5.9)

Table 2.

Baseline Predictors of Variability (RMSSD) of Suicidal Ideation Scores over a 2-year Follow-up

Predictor Variable Name	N	B	SE	df	t Value	P-value
17-item Hamilton Depression Scale *	50	0.05	0.03	135	1.35	0.178
Beck Depression Inventory *	50	0.03	0.02	133	1.51	0.134
Emotional Abuse Score from CTQ	48	0.03	0.04	127	0.73	0.468
Physical Abuse Score from CTQ	48	0.07	0.03	127	2.06	0.042
Sexual Abuse Score from CTQ	48	0.03	0.04	127	0.80	0.426
Emotional Neglect Score from CTQ	47	0.03	0.04	126	0.88	0.379
Physical Neglect Score from CTQ	47	0.10	0.07	124	1.38	0.171
CTQ Total Score	46	0.02	0.01	123	1.72	0.089
Barratt Impulsivity Score	47	0.03	0.01	124	2.49	0.014
Brown Goodwin Lifetime Aggression Score	50	0.09	0.03	134	2.71	0.008
Affective Liability Scale	44	0.01	0.01	116	1.85	0.067

RMSSD (square root of the) Mean Successive Squared Deviations

* excluding suicide item

CTQ Childhood Trauma Questionnaire