



Psychometric properties and factor structure of the suicidal narrative inventory in major depression: A multicentric evaluation

Vikas Menon^{a,*}, Ilambaridhi Balasubramanian^a, Megan L. Rogers^b, Sandeep Grover^c, Bhavesh Lakdawala^d, Rajeev Ranjan^e, Sujit Sarkhel^f, Naresh Nebhinani^g, Roy Abraham Kallivayalil^h, Vijaya Raghavanⁱ, Kshirod Kumar Mishra^j, Jitender Aneja^k, Niteen Abhivant^l, Raman Deep^m, Lokesh Kumar Singhⁿ, Avinash De Sousa^o, Arvind Nongpiur^p, Alka A. Subramanyam^q, Debadatta Mohapatra^r, Sujita Kumar Kar^s, Vishal Dhiman^t, PN Suresh Kumar^u, Umesh Shreekantiah^v, Samrat Singh Bhandari^w, Ramdas Ransing^x, Vikhram Ramasubramanian^y, Samir Kumar Praharaj^z

^a Dept of Psychiatry, Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), Puducherry 605006, India

^b Dept of Psychology, Texas State University, TX 78666-4684, USA

^c Dept of Psychiatry, Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh-160012, India

^d Dept of Psychiatry, Narendra Modi Medical College, Ahmedabad 380006, India

^e Dept of Psychiatry, All India Institute of Medical Sciences (AIIMS), Patna 801507, India

^f Dept of Psychiatry, Institute of Psychiatry, Kolkata 700025, India

^g Dept of Psychiatry, All India Institute of Medical Sciences (AIIMS), Jodhpur 342005, India

^h Dept of Psychiatry, Pushpagiri Institute of Medical Sciences and Research Centre, Thiruvalla, Kerala 689101, India

ⁱ Dept of Psychiatry, Schizophrenia Research Foundation (SCARF), Chennai 600101, India

^j Dept of Psychiatry, Mahatma Gandhi Institute of Medical Science (MGIMS), Sevagram, Maharashtra 442102, India

^k Dept of Psychiatry, All India Institute of Medical Sciences (AIIMS), Bhatinda, Punjab 151001, India

^l Dept of Psychiatry, Byramjee Jeejeebhoy Government Medical College and Sassoon General Hospitals, Pune 411011, India

^m Dept of Psychiatry, All India Institute of Medical Sciences (AIIMS), Delhi 110029, India

ⁿ Dept of Psychiatry, All India Institute of Medical Sciences (AIIMS), Raipur, Chhattisgarh 492009, India

^o Dept of Psychiatry, Lokmanya Tilak Municipal Medical College (LTMMC), Mumbai 400022, India

^p Dept of Psychiatry, North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences (NEIGRIHMS), Shillong, Meghalaya 793018, India

^q Dept of Psychiatry, Topiwala National Medical College (TNMC) and Bai Yamunabai Laxman (BYL) Nair Medical College, Mumbai 400008, India

^r Dept of Psychiatry, All India Institute of Medical Sciences (AIIMS), Bhubaneswar, Odisha 751019, India

^s Dept of Psychiatry, King George's Medical University (KGMU), Lucknow, Uttar Pradesh 226003, India

^t Dept of Psychiatry, All India Institute of Medical Sciences (AIIMS), Rishikesh, Uttarakhand 249203, India

^u Dept of Psychiatry, Iqraa International Hospital and Research Center, Calicut, Kerala 673009, India

^v Dept of Psychiatry, Central Institute of Psychiatry (CIP), Ranchi, Jharkhand 834006, India

^w Dept of Psychiatry, Sikkim Manipal Institute of Medical Sciences (SMIMS), Sikkim Manipal University, Tadong, Gangtok, Sikkim 737102, India

^x Dept of Psychiatry, All India Institute of Medical Sciences (AIIMS), Guwahati, Assam 781101, India

^y Dept of Psychiatry, Ahana Hospitals, Madurai, Tamil Nadu 625020, India

^z Dept of Psychiatry, Kasturba Medical College, Manipal, Manipal Academy of Higher Education, Manipal, Karnataka 576104, India

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ABSTRACT

Background: The Suicidal Narrative Inventory (SNI) is a 38-item self-report measure developed to assess elements of the suicidal narrative, a subacute, predominantly cognitive, presuicidal construct. Our objectives were to assess the factor structure, validity, and reliability of the SNI-38 among adults with major depressive disorder (MDD).

Methods: Using a cross-sectional design, we administered the Hindi version of the SNI along with other self-report measures to adults with MDD, recruited from 24 tertiary care hospitals across India. Confirmatory factor analysis (CFA) was performed to assess the factor structure of SNI-38. Reliability (internal consistency) was assessed using

* Correspondence to: Department of Psychiatry, JIPMER, Puducherry 605006, India.

E-mail address: drvmenon@gmail.com (V. Menon).

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Cronbach's alpha (α). Convergent, discriminant, and criterion validity of the SNI-38 were tested by comparing it against other appropriate measures.

Results: We collected usable responses from 654 Hindi-speaking participants (Mean age = 36.9 ± 11.9 years, 50.2% female). The eight-factor solution of the SNI showed good model fit indices ($\chi^2[637] = 3345.58$, $p < .001$, CFI = .98, and RMSEA = .08). Internal consistencies for the SNI subscale scores were good to excellent, α ranging from .73 to .92. While most subscales significantly converged with other measures, associations were comparatively weaker and inconsistent for the 'thwarted belongingness' and 'goal reengagement' subscales.

Conclusion: Consistent with prior data, our study confirmed an eight-factor solution and demonstrated adequate psychometric properties for the Hindi version of the SNI-38 in our sample. These findings provide empirical support for the use of SNI to assess the suicidal narrative among Indian adults with MDD.

1. Introduction

Worldwide, suicide contributes to more than 800,000 deaths annually, with devastating economic, social, and familial consequences. In India, recent data indicate a concerning 7.2% rise in reported suicides for 2021 compared to the previous year (Menon et al., 2023b). Even more alarming is the consistent upward trend in suicide rates over the last five years, as reported by the National Crime Records Bureau, India's nodal agency for suicide data (National Crime Records Bureau, 2023). These figures underscore the need for robust suicide prevention efforts, particularly emphasizing the early identification and support for individuals at risk. This issue assumes greater significance because of the consequences wrought by the COVID-19 pandemic and its potential to increase suicide rates (Han et al., 2020).

Risk assessment is an important step in managing individuals vulnerable to suicide and self-harm. Traditional suicide risk assessment models heavily rely on long-term risk factors to evaluate acute suicide risk, yet this approach is inadequate in predicting suicide risk in individual patients (Large et al., 2011). Furthermore, self-reported suicidal ideation (SI) is an important component of suicide risk assessment, prompting further questioning about plans and intent. However, depending only on SI is problematic, as many attempters may never experience SI (LeMaster et al., 2004) or experience too close to the act (Deisenhammer et al., 2009), or choose not to reveal SI for various reasons (Blanchard and Farber, 2020; Richards et al., 2019). Moreover, current SI has shown unsatisfactory predictive value for future suicidal behavior (SB) (Kessler et al., 1999; Ribeiro et al., 2016).

Consequently, there has been a growing emphasis on identifying individual cognitive-psychological processes that underlie progression from chronic to acute suicide risk. Two examples of such multistage models include the interpersonal theory of suicide (Van Orden et al., 2010) and the integrated motivational-volitional model of SB (O'Connor and Kirtley, 2018). While these models seek to explain individual differences in SB, there remains a pressing need to develop time-sensitive models that integrate long-term and near-term risk factors. Such models should (1) explain the psychological progression of SB in individuals and (2) delineate critical stages where one can potentially intervene to arrest this progression.

In this context, Galynker and colleagues have described the Narrative-Crisis model (NCM) of suicide (Bloch-Elkouby et al., 2021b; Galynker, 2017). Specifically, the NCM hypothesizes that when a vulnerable individual experiences a stressful life event, they may develop a subacute cognitive-affective state called the suicidal narrative (SN), whose central feature is an exaggerated negative cognitive view of self in relation to others (Cohen et al., 2022). The symptoms during this state may range from difficulties in disengaging from unattainable treasured goals, an inability to re-orient towards newer, more feasible goals, feelings of defeat, humiliation, loneliness, and social isolation (referred to as thwarted belongingness [TB]), and a perception that one's existence is a burden on others. All these factors contribute to making suicide a viable option (O'Connor et al., 2012; O'Connor and Kirtley, 2018; Van Orden et al., 2010).

The next step in the NCM model is the triggering of the Suicide Crisis Syndrome, a primarily affective state characterized by five dimensions:

entrapment, affective disturbances, cognitive dyscontrol, feelings of hyperarousal, and social withdrawal (Schuck et al., 2019; Yaseen et al., 2012). According to NCM, the development of SCS heralds imminent suicide risk. Thus, the predominantly cognitive SN is located more distally in the pathway to suicide compared to the SCS in this model.

Critically, the NCM does not rely on self-reported SI as a milestone, rendering it novel and worth investigating. Prior studies have investigated the cross-cultural validity of the Suicide Crisis Syndrome and found consistent results (Menon et al., 2022; Park et al., 2023; Wu et al., 2022). Only four prior studies (Chistopolskaya et al., 2020; Cohen et al., 2019; Menon et al., 2023a; Sung-Ya Chang et al., 2022) have tested the factor structure and validity of the SN, assessed using the suicidal narrative inventory (SNI). Among these, Cohen et al. (2019) was the first to examine the factor structure of the SNI: authors performed a principal component analysis of SNI on a diagnostically heterogeneous group of psychiatric outpatients. They identified two distinct factors, interpersonal and goal orientation, into which the symptoms cohered (Cohen et al., 2019).

The other three studies performed confirmatory factor analyses (CFA) of the SNI on Russian (Chistopolskaya et al., 2020), Indian (Menon et al., 2023a), and Taiwanese (Sung-Ya Chang et al., 2022) general populations with largely consistent results: an eight-factor solution showed a good model fit with adequate psychometric properties. To date, there has been no attempt to validate the SNI in diagnostic subgroups. In our previous work, we only performed a CFA of the SCI-2 in major depressive disorder (MDD) (Menon et al., 2024). To test the full NCM model and its concurrent validity for SB across diverse populations, it is important to first establish the validity of its components, such as SN and SCS.

In this context, we aimed to assess the internal factor structure, reliability (internal consistency), and validity (convergent, discriminant, and criterion) of the SNI among adults diagnosed with major depression. Patients with MDD were chosen for investigation because they represent a vulnerable group for SB (Favril et al., 2022; Kessler et al., 1999). Drawing upon prior findings, our primary hypothesis was that the SNI would show a strong fit with an eight-factor solution in our sample. Additional hypotheses were that the SNI subscale scores would demonstrate good reliability and adequate convergent, discriminant, and criterion validity.

2. Methods

2.1. Setting and Design

This cross-sectional study was conducted between November 2021 and August 2022 in the respective outpatient and inpatient psychiatry departments of 24 tertiary care hospitals in India. The study was carried out with the support of the Research and Education Foundation subcommittee of the Indian Psychiatric Society. The overall coordinating centre was Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), a public sector teaching cum tertiary care hospital located in Puducherry, South India.

The participating centres were selected purposively and included centrally funded institutions ($n = 11$), state government-funded

institutions ($n = 6$), private sector medical schools ($n = 5$), and non-teaching private hospitals ($n = 2$), drawn from the five geographic zones of the country. Each of these institutions had walk-in outpatient departments, allowing patients to register on the day of their appointment, a prevalent practice in India, and these centers provide multi-modal services to users. Further details on reasons for study site selection is provided elsewhere (Menon et al., 2024). The institutional ethics committees of each participating site approved the study protocol. Written informed consent was obtained from every participant.

2.2. Participants

We used purposive, non-random sampling to recruit adults aged 18–65 years diagnosed with MDD, single or recurrent episodes, using the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) (American Psychiatric Association, 2013). Patients with psychotic symptoms and those with documented intellectual disability were excluded. The primary aim of the study was to assess the correlates of SCS in MDD. This paper reports the factor structure and psychometric properties of the Hindi SNI-38 among Indian adults diagnosed with MDD.

2.3. Measures

Suicidal Narrative Inventory (SNI) (Chistopolskaya et al., 2020): This is a 38-item self-report measure evaluating symptoms of the suicidal narrative, grouped into eight subscales: TB (5 items, e.g., "These days, other people care about me"), perceived burdensomeness (PB) (5 items, e.g., "These days, I think my death would be a relief to other people"), fear of humiliation (5 items, e.g., "I fear being ridiculed"), defeat (5 items, e.g., "I feel defeated by life"), goal reengagement (5 items, e.g., "If I have to stop pursuing an important goal in my life, I start working on other new goals"), goal disengagement (3 items, e.g., "I can't let my goals go"), entrapment (5 items, e.g., "I feel powerless to change things"), and perfectionism (5 items, e.g., "I must work to my full potential at all times"). Each item is rated on a five-point Likert scale with the preceding four weeks as the reference range. We used the SNI subscale scores to assess its convergent, discriminant, and criterion validity against other measures.

Suicide Crisis Inventory (SCI-2) (Bloch-Elkouby et al., 2021a): This is a 61-item self-report measure evaluating symptoms of the suicide crisis syndrome. It has five sub-scales, each rated on a five-point Likert scale: entrapment (10 items; e.g., "Did you feel trapped?"), affective disturbance (18 items; e.g., "Did you feel nervousness or shakiness inside?"), loss of cognitive control (15 items; e.g., "Did you feel that your thoughts were racing?"), hyperarousal (13 items; e.g., "Did you feel so restless that you could not sit still?"), and social withdrawal (5 items; e.g., "Did you feel isolated from others?"). Cronbach's alpha in our study population was 0.98. We used total SCI-2 scores to test the convergent validity of SNI subscale scores.

Columbia Suicide Severity Rating Scale (C-SSRS) (Posner et al., 2011): This is a semi-structured interview assessing the complete spectrum of SI and SB and evaluating their severity. We used the C-SSRS to assess the presence of lifetime and past-month SI and SA and to test the criterion validity of SNI. Cronbach's alpha in our study sample for lifetime SI was 0.86 and past-month SI was 0.83.

Patient Health Questionnaire (PHQ)-9 (Kroenke et al., 2001): This is a valid and reliable 9-item self-report measure for depressive symptoms. We checked correlations between the total score on the PHQ-9, ranging from 0 to 27, and SNI subscale scores. Cronbach's alpha in our study population was 0.84.

Generalized Anxiety Disorder (GAD)-7 (Spitzer et al., 2006): This is a 7-item self-report measure for anxiety symptoms. We used total GAD-7 score to check the convergent validity of the SNI. Cronbach's alpha in our study sample was 0.86.

Perceived Stress Scale (PSS)-10 (Cohen et al., 1983): This is a popular

10-item measure of self-reported stress. We used the total PSS-10 scores ranging from 0 to 40 to check the convergent validity of SNI. Cronbach's alpha in the present study sample was 0.77.

Presumptive Stressful Life Events Scale (PSLES) (Singh et al., 1984): This 51-item tool was specifically developed to assess stressful life events in the Indian setting. Whereas the PSLES quantifies stress due to discrete life events, the PSS globally measures perceived stress. The number of life events endorsed by every participant in the last year was summed and this score was used to check convergent validity of the SNI.

Connor-Davidson Resilience Scale (CD-RISC)-10 (Connor and Davidson, 2003): This 10-item scale assesses psychological resilience, a well-known protective factor against suicide. We used the total CD-RISC scores to check the discriminant validity of the SNI. Cronbach's alpha for the study sample was 0.93.

To enhance response diversity, we translated the SNI-38 and SCI-2 into six local languages: Hindi, Bengali, Odiya, Tamil, Marathi, and Malayalam. These languages were selected because of their status as the official languages in the participating states. For other measures, local language translations were obtained from copyright holders. We followed the World Health Organization's recommended translation procedure (World Health Organization, 2016) and used the English or local language versions of measures, depending on participant preference and language proficiency. For illiterate patients, questionnaire items were read out by raters and their responses were noted. Given sample size limitations of many of the languages, and the potential heterogeneity among them, we analyzed only the Hindi language data in the present paper.

2.4. Data analytic strategy

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (Kaiser and Rice, 1974) and Bartlett's (1951) test of sphericity were first used to determine whether data were appropriately correlated for factor analysis. Next, CFAs were employed to test whether the eight-factor model, in which items were set to load on their respective subscales (i.e., PB, TB, fear of humiliation, defeat, goal disengagement, goal reengagement, entrapment, and perfectionism), was replicated in this sample. Weighted least squares (WLS) estimation was used to account for the ordinal (i.e., rated on a 5-point Likert scale) nature of all indicator variables.

Model fit was evaluated using the chi-square statistic (χ^2 , with non-significant indicative of good fit), comparative fit index (CFI $\geq .95$), Tucker-Lewis index (TLI $\geq .95$), root mean squared error of approximation (RMSEA $\leq .08$), and standardized root mean residual (SRMR $\leq .06$), as recommended by established guidelines (Hu and Bentler, 1999; Vandenberg and Lance, 2000). Bivariate correlations were used to test the convergent, discriminant, and criterion validity of the SNI subscale scores with other constructs. There were no missing data in the primary variables of interest. All analyses were conducted in R using the *lavaan* (Rosseel, 2012), *semTools* (Jorgensen et al., 2021), and *psych* (Revelle, 2015) packages.

3. Results

3.1. Participants

Participants included 654 Hindi-speaking patients (50.2% women), aged 18–65 years ($M = 36.9$, standard deviation [SD] = 11.9), currently under treatment for MDD. The sample had between 0 and 26 years ($M = 11.4$, $SD = 4.9$) of education. Most participants self-identified as married ($n = 445$; 68.0%) and living in a nuclear family ($n = 417$; 63.8%), and approximately half were unemployed ($n = 304$; 46.5%) and lived in an urban locale ($n = 298$; 45.6%).

Nearly all participants were engaged in outpatient treatment ($n = 604$; 92.4%), whereas 50 (7.6%) were in inpatient treatment at the time of data collection. Total duration of illness ranged from 0 to 456 months

($M = 36.7, SD = 52.7$), and total duration of treatment ranged from 0 to 360 months ($M = 16.5, SD = 37.4$). A fifth of the sample had a history of inpatient treatment for major depressive episodes ($n = 130; 20.0\%$). Approximately a fifth ($n = 121; 18.5\%$) had comorbid medical illnesses, and approximately a seventh ($n = 87; 13.3\%$) had comorbid psychiatric illnesses. A minority ($n = 96, 14.7\%$) of participants reported a lifetime suicide attempt, and 61 (9.3%) reported a past-month attempt. Detailed sociodemographic and clinical characteristics are presented in Table 1.

3.2. Confirmatory Factor Analyses

Both the KMO statistic (.94) and Bartlett's test of sphericity ($K^2[37] = 149.98, p < .001$) indicated that there were sufficient significant correlations in the data for factor analysis. The eight-factor model of the SNI had good model fit ($\chi^2[637] = 3345.58, p < .001, CFI = .98, TLI = .98, RMSEA = .08, SRMR = .07$). Standardized factor loadings are presented in Table 2, and covariances between factors are presented in Table 3. All items significantly and positively loaded onto their respective factors. However, the TB and goal reengagement factors exhibited inconsistent patterns of association with the other factors. Specifically, TB and goal reengagement was negatively associated with all other factors.

3.3. Reliability, convergent, discriminant, and criterion validity

Internal consistencies of the SNI subscale scores were as follows: TB ($\alpha = .73$), PB ($\alpha = .92$), fear of humiliation ($\alpha = .89$), defeat ($\alpha = .89$), goal reengagement ($\alpha = .92$), goal disengagement ($\alpha = .76$), entrapment (α

Table 1
Sociodemographic and Clinical Characteristics of Participants.

	N	Valid %
Gender		
Male	326	49.8
Female	328	50.2
Age ($M = 36.89, SD = 11.86, Range = 18-65$)		
Marital Status		
Single	198	30.3
Married	445	68.0
Separated	11	1.7
Years of Education ($M = 11.39, SD = 4.92, Range = 0-26$)		
Employment Status		
Unemployed	304	46.5
Unskilled Worker	47	7.2
Semi-Skilled Worker	59	9.0
Skilled Worker	35	5.4
Clerical/Shop-Owner/Farmer	94	14.4
Semi-Professional	49	7.5
Professional	66	10.1
Family Type		
Nuclear	417	63.8
Joint	151	23.1
Extended	80	12.2
Living Alone	6	0.9
Locality		
Urban	298	45.6
Semiurban	127	19.4
Rural	229	35.0
Total Duration of Illness ($M = 36.70, SD = 52.72, Range = 0-456$)		
Duration of Treatment ($M = 16.50, SD = 37.37, Range = 0-360$)		
Number of Episodes Needing Inpatient Treatment		
0	508	77.7
1	103	15.7
2+	27	4.3
Missing	15	2.3
Current Treatment Setting		
Outpatient	604	92.4
Inpatient	50	7.6
Recurrent Depressive Disorder (Yes)	261	40.1
Comorbid Medical Illness (Yes)	121	18.5
Comorbid Psychiatric Illness (Yes)	87	13.3
Lifetime Suicide Attempt (Yes)	96	14.7
Past-Month Suicide Attempt (Yes)	61	9.3

Table 2
Standardized Factor Loadings of all Items.

Subscale/Item	Factor Loading
Perceived Burdensomeness	
Item 1	.89
Item 3	.92
Item 4	.91
Item 6	.91
Item 31	.86
Thwarted Belongingness	
Item 9 (R)	.63
Item 15 (R)	.64
Item 20 (R)	.62
Item 33 (R)	.69
Item 35 (R)	.82
Fear of Humiliation	
Item 10	.82
Item 23	.80
Item 29	.87
Item 30	.86
Item 36	.83
Defeat	
Item 12	.79
Item 14	.76
Item 26	.86
Item 27	.85
Item 28	.89
Goal Reengagement	
Item 2 (R)	.87
Item 5 (R)	.87
Item 11 (R)	.91
Item 21 (R)	.86
Item 24 (R)	.86
Goal Disengagement	
Item 7	.80
Item 34	.78
Item 37	.76
Entrapment	
Item 16	.76
Item 17	.79
Item 18	.83
Item 25	.83
Item 38	.76
Perfectionism	
Item 8	.79
Item 13	.80
Item 19	.76
Item 22	.82
Item 32	.82

Note: (R) refers to reverse scored items.

$= .85$), and perfectionism ($\alpha = .87$). Descriptive statistics of the SNI subscales and bivariate correlations with all other measures are included in Table 4. All subscales of the SNI were normally distributed.

There were significant correlations between PB, fear of humiliation, defeat, goal disengagement, entrapment, and perfectionism and all scales being compared for convergent and discriminant validity (depression, anxiety, perceived stress, life events, resilience). TB and goal reengagement exhibited inconsistent and weak associations with these constructs. There were positive relations between PB, fear of humiliation, defeat, and entrapment and suicide-related outcomes (i.e., lifetime and past-month SI and suicide attempts), but weak associations between TB, goal disengagement, goal reengagement, and perfectionism and suicide-related outcomes.

4. Discussion

Consistent with our primary hypothesis, the Hindi version of the SNI showed a satisfactory fit for an eight-factor model. We also found good to excellent internal consistency for the eight SNI subscale scores. The strong correlations between SNI subscale scores suggest they are related to each other. The significant associations between most SNI subscales and measures of stress, negative emotions, and life events indicated

Table 3
Standardized Covariances between All Latent Factors.

Factor	2	3	4	5	6	7	8
1. Perceived Burdensomeness	-.12**	.71***	.57***	.62***	-.48***	.68***	.23**
2. Thwarted Belongingness	—	-.29***	-.11*	-.54***	.61***	-.22***	-.45***
3. Fear of Humiliation		—	.55**	.74***	-.57***	.62***	.35**
4. Defeat			—	.23***	-.08*	.93***	.09*
5. Goal Disengagement				—	-.79***	.43***	.66***
6. Goal Reengagement					—	-.29***	-.49***
7. Entrapment						—	.16***
8. Perfectionism							—

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Table 4
Correlations between Suicidal Narrative Inventory Subscale Scores and Other Relevant Constructs.

	Perceived Burdensomeness	Thwarted Belongingness	Fear of Humiliation	Defeat	Goal Reengagement	Goal Disengagement	Entrapment	Perfectionism
SCI-2	.60***	-.22***	.61***	.68***	-.32***	.44***	.77***	.21***
Depression	.46***	-.07	.46***	.49***	-.24***	.32***	.53***	.05
Anxiety	.41***	-.07	.49***	.48***	-.21***	.31***	.55***	.10*
Perceived Stress	.16***	.08*	.03	.50***	.24***	-.13***	.46***	-.10*
Life Events	-.10*	-.05	-.10*	-.16***	-.02	-.03	-.15***	-.11**
Resilience	.05	-.30***	.14***	-.26***	-.42***	.36***	-.12**	.27***
Lifetime SI	.20***	.06	.09*	.28***	.04	-.03	.30***	-.09*
Past-Month SI	.33***	.00	.16***	.37***	.01	.06	.40***	-.02
Lifetime SA	.24***	.07	.14***	.23***	.03	.05	.24***	-.02
Past-Month SA	.22***	-.01	.14***	.19***	.02	.11**	.22***	.01
Mean	7.18	10.57	7.28	11.69	13.25	4.36	10.95	8.19
SD	5.80	4.26	5.41	5.07	5.09	2.98	4.83	5.00
Range	0–20	0–20	0–20	0–20	0–20	0–12	0–20	0–20
Skewness	.39	-.06	.36	-.32	-.36	.34	-.19	.30
Kurtosis	-1.01	-.38	-.81	-.61	-.75	-.54	-.52	-.71

Note: * $p < .05$, ** $p < .01$, *** $p < .001$. SD = Standard Deviation; PB = Perceived Burdensomeness; TB = Thwarted Belongingness; Hum. = Fear of Humiliation; GR = Goal Reengagement; GD = Goal Disengagement; PSS = Perceived Stress Scale; SI = Suicidal Ideation; SA = Suicide Attempt; SCI-2 = Suicide Crisis Inventory—2.

good to adequate convergent validity, whereas the low or negative correlations with resilience pointed to sufficient discriminant validity. Criterion validity, judged by associations with suicide-related outcomes, was adequate. Notably, the TB and goal reengagement subscales showed inconsistent patterns of association with other measures.

The suicidal narrative construct stemmed from the need to distinguish between distal and proximal risk factors for suicide. Preliminary evidence supports the conceptualization of the suicidal narrative as a two-dimensional construct (Cohen et al., 2019). The first dimension is the interpersonal domain, comprised of TB, PB, humiliation, and social defeat. Here, the affected individual harbours a deeply negative self-view, with feelings of alienation, shame, and denigration.

The second factor, goal orientation, comprises mainly goal disengagement and reengagement subscales. Individuals with difficulties in this domain become excessively fixated on goals and cannot disconnect themselves from unattainable goals. This increases proneness to goal frustration and potential humiliation when the goals are not achieved. Prior analyses have shown that the goal orientation subscales did not correlate with suicidal phenomena (Cohen et al., 2019) and stressful events (Menon et al., 2023a) as robustly as the interpersonal factor subscales. We found that not only goal reengagement but also TB subscale, exhibited weak correlations with stress and suicidal phenomena. As both these domains consisted of exclusively reverse-scored items, these patterns potentially suggest inconsistent responses to reverse-scored items in this sample. However, they may also indicate a poor understanding of these items in the Indian context where goal setting and motivation are more likely to be grounded in concerns for family, colleagues, and society (Chadda and Deb, 2013)

Barring these subscales, others showed significant positive correlations with SCI-2. These findings broadly support the construct validity of

the NCM in our setting. The proposed eight-factor solution of the SNI is consistent with prior examinations of the internal factor structure of the SNI from India (Menon et al., 2023a) and Russia (Chistopolskaya et al., 2020); both these studies, however, were done in the general population. The present research extends these findings to clinical samples. The Taiwanese sample, however, showed a good model fit with the seven-factor solution (Sung-Ya Chang et al., 2022).

4.1. Implications

Ours is the first investigation of the construct validity of the SNI in major depression. Previously, we have validated the SCI-2 in the same diagnostic subgroup (Menon et al., 2024). Together, these findings provide a basis for examining the stepwise progression of suicidal risk expounded in the NCM of suicide. Our findings also provide a basis for testing the concurrent and predictive validity of NCM for near-term STBs in psychiatric populations; preliminary results in this direction are encouraging (Cohen et al., 2022). However, given the modest performance of the SCI-2 (Rogers et al., 2022; Yaseen et al., 2019; Ying et al., 2020) and other suicide prediction tools (Kessler et al., 2020) for near-term STBs, readers may exercise cautious optimism.

Additionally, our findings spotlight the role of acute affective and cognitive states in heralding near-term suicidal risk. Another example of a related, acute, suicide-specific construct is the acute suicide affective disturbance (ASAD), characterized by the rapid emergence of suicide intent and affective disturbances (Rogers et al., 2019, 2017; Tucker et al., 2016). It may also be worth examining ASAD within the context of the NCM to further gauge their positive predictive value for future SB.

From a clinical perspective, the NCM can potentially inform customized interventions for those at different stages of progression to

SB. Vulnerable individuals, such as those with a history of childhood trauma, impulsivity, and insecure attachment (Bernecker et al., 2019; Mościcki, 2001), are prone to stressful life events (Mikulincer and Shaver, 2012) and form the starting point in this model. They may benefit from therapy to enhance coping and problem-solving skills (Gustavson et al., 2016; Lerner and Clum, 1990). For those in the SN phase, cognitive interventions targeting problematic negative representations of the self and other aspects of the narrative may be offered (Beck, 2011; Stanley et al., 2009). The final and most acute phase in this model is the SCS. Individuals in this phase may need high-intensity interventions such as restricting access to means, supervision and referral to specialist services (Cohen et al., 2022), pharmacotherapy targeting relevant biological circuits and neurotransmitters (Calati et al., 2019), and psychotherapy focusing on emotion regulation, behavior dyscontrol, and distress tolerance (Linehan, 1993).

Interestingly, two subscales (TB and goal reengagement) showed weak associations with other SNI domains and insignificant correlations with stress and suicidal phenomena. Other items, such as goal disengagement and perfectionism, also showed small convergent correlations. Finally, TB correlated with goal orientation/perfectionism domains but showed weak and inconsistent associations with domains such as PB and measures of stress and SB. Perfectionism traits have been linked to dysfunctional perceptions of social relationships (Flett et al., 2014), wherein a person seeks perfection to attain respect, love, and social connections. This may explain the good correlations noted between TB and perfectionism. The weak correlations noted between perfectionism and suicide-related outcomes may be explained by the multi-faceted (adaptive versus maladaptive) nature of the perfectionism construct (Slaney et al., 1995), limitations in its measurement by the SNI, and its enduring 'trait' characteristics rather than being a temporary state (Pia et al., 2020).

However, the small correlation between TB and PB was unexpected. One potential explanation could be inconsistent responses to, or insufficient understanding of, the negatively worded items on the TB subscale, contributing to its modest internal consistency. However, it is also plausible that TB is a less likely experience in collectivist societies like India (Chadda and Deb, 2013). Consequently, we speculate that PB may be a stronger driver of suicidal phenomena than TB in Indian context. Indeed, researchers investigating the progression from chronic to acute suicide risk among college-going students suggested that PB should be given greater salience when developing interventions for suicide in this group (Bhargav and Swords, 2022). However, since prior cross-national investigations (Chistopolskaya et al., 2020) have also echoed these unexpected findings, there is a need to reexamine the status and utility of TB, perfectionism, and goal orientation domain items in the SNI subscales for Indian population.

4.2. Limitations and strengths

Although our results are promising, several study limitations must be carefully considered. Some correlations between subscales and convergent/divergent measures, though statistically significant, were weak, possibly due to the relatively large sample size. Because we used a cross-sectional design, no inference can be made about the direction of relationship between elements of the NCM such as stressful life events, SN, and SCS. These associations and the predictive validity of the NCM for short-term suicidal phenomena need to be explored using longitudinal designs and statistical approaches such as structural equation modelling.

We did not include quality check items in the questionnaire, such as captchas or attention checks, which could have potentially enhanced the consistency of responses. Responses to individual questionnaire items may have been limited by a partial understanding of their import, recall and social desirability bias. Our findings must be interpreted cautiously because we used purposive, non-random sampling. Finally, this is the first investigation of the internal factor structure of the SNI in MDD; our findings need replication across cultures and settings.

Strengths of the study include a sufficiently large sample to examine the factor structure of SNI-38 and associations of interest. Study participants were selected from all major zones of the country. The demographic breakdown suggested sample diversity in terms of age, gender, and domicile status (rural/urban). However, this may have also contributed to some unexpected findings, as explained in the previous section. Given the paucity of data on the reliability and validity of SNI-38 in psychiatric populations, specifically MDD, our findings may contribute to the ongoing discussion in this area.

5. Conclusions

Consistent with prior data from the general population, the Hindi version of the SNI fit an eight-factor solution among Indian adults with MDD. Further, we noted good to excellent internal consistency and adequate support for the convergent, discriminant, and criterion validity of SNI-38. Our results provide empirical support for the use of SNI-38 to assess the suicidal narrative in MDD in our setting. Our findings also provide a basis for investigating the proposed chain of events described in the NCM of suicide, a novel, multistage framework that seeks to explain the individual progression from chronic to near-term suicide risk, identify high-risk individuals, and provide customized interventions for individuals experiencing, yet denying, suicidal ideation.

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CRedit authorship contribution statement

Samir Kumar Praharaj: Writing – review & editing, Supervision, Methodology, Investigation, Formal analysis, Conceptualization. **Bhavesh Lakdawala:** Writing – review & editing, Methodology, Investigation. **Rajeev Ranjan:** Writing – review & editing, Methodology, Investigation. **Ramdas Ransing:** Writing – review & editing, Methodology, Investigation. **Megan L Rogers:** Writing – original draft, Supervision, Software, Project administration, Methodology, Formal analysis, Data curation, Conceptualization. **Vikhram Ramasubramanian:** Writing – review & editing, Methodology, Investigation. **Sandeep Grover:** Writing – review & editing, Methodology, Investigation. **Umesh Shreekantiah:** Writing – review & editing, Methodology, Investigation. **Samrat Singh Bhandari:** Writing – review & editing, Methodology, Investigation. **Ilambaridhi Balasubramanian:** Writing – review & editing, Supervision, Software, Project administration, Methodology, Data curation. **Pattath Narayanan Suresh Kumar:** Writing – review & editing, Methodology, Investigation. **Kshirod Kumar Mishra:** Writing – review & editing, Methodology, Investigation. **Roy Abraham Kallivayalil:** Writing – review & editing, Methodology, Investigation. **Vijaya Raghavan:** Writing – review & editing, Methodology, Investigation. **Sujit Sarkhel:** Writing – review & editing, Methodology, Investigation. **Naresh Nebhinani:** Writing – review & editing, Methodology, Investigation. **Avinash De Sousa:** Writing – review & editing, Methodology, Investigation. **Arvind Nongpiur:** Writing – review & editing, Methodology, Investigation. **Raman Deep:** Writing – review & editing, Methodology, Investigation. **Lokesh Kumar Singh:** Writing – review & editing, Methodology, Investigation. **Jitender Aneja:** Writing – review & editing, Methodology, Investigation. **Niteen Abhivant:** Writing – review & editing, Methodology, Investigation. **Vikas Menon:** Writing – original draft, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Sujita Kar:** Writing – review & editing, Methodology, Investigation. **Vishal Dhiman:** Writing – review & editing, Methodology, Investigation. **Alka A Subramanyam:**

Writing – review & editing, Methodology, Investigation. **Debadatta Mohapatra:** Writing – review & editing, Methodology, Investigation.

Declaration of Competing Interest

The authors have no conflicts to declare with regard to the contents of this manuscript.

Data Availability

Relevant study data will be shared upon reasonable request. Please contact the corresponding author

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