The Columbia Lighthouse Project/Center for Suicide Risk Assessment

The Columbia Suicide Severity Rating Scale (C-SSRS)

Supporting Evidence

Last Revised
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## The Columbia Suicide Severity Rating Scale (C-SSRS): Psychometric Evidence

### Table 1: Studies Supporting Specific Psychometric Properties

<table>
<thead>
<tr>
<th>Psychometric Property</th>
<th>Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predictive and/or Incremental Validity</td>
<td>Brent et al., 2009^; Posner et al., 2011*^; Gipson et al., 2015^; Conway et al. 2016^; Horwitz et al., 2015^; Mundt et al., 2013*; Arias et al. 2013*; Greist et al. 2014*; Brown et al., 2015*; Arias et al., 2016*; Madan et al. 2016*</td>
</tr>
<tr>
<td>Sensitivity to Change</td>
<td>Posner et al., 2011*^; Ionescu et al., 2016*; Lindh et al, 2019*</td>
</tr>
<tr>
<td>Sensitivity and Specificity</td>
<td>Posner et al., 2011*^; Mundt et al., 2013*; Viguera et al. 2015*; Madan et al. 2016*; Lindh et al, 2019*</td>
</tr>
<tr>
<td>Positive and Negative Predictive Value (PPV &amp; NPV)</td>
<td>Mundt et al 2013*; Viguera et al 2015*;</td>
</tr>
<tr>
<td>Reliability (internal consistency)</td>
<td>Posner et al., 2011*^; Kilincaslan et al. 2018^; Pai et al. 2015*; Madan et al. 2016*</td>
</tr>
<tr>
<td>Reliability (inter-rater; multi-method agreement)</td>
<td>Kerr et al., 2013^; Brent et al., 2009^; Kilincaslan et al. 2018^; Hesdorffer et al., 2013*; Arias et al., 2013*; Brown et al. 2015*</td>
</tr>
<tr>
<td>Internal Structure (Factor Analysis)</td>
<td>Al-Halabi et al., 2016b*; Madan et al. 2016*</td>
</tr>
<tr>
<td>Convergent Validity &amp; Accuracy</td>
<td>Posner et al., 2011*^; Kerr et al., 2013^; Kilincaslan et al. 2018^; Pai et al. 2015*; Youngstrom et al. 2015*; Brown et al., 2015*; Madan et al.2016*</td>
</tr>
<tr>
<td>Divergent &amp; Discriminant Validity</td>
<td>Posner et al., 2011*^; Kerr et al., 2013^; Kilincaslan et al. 2018^</td>
</tr>
<tr>
<td>Cross-Cultural Validation</td>
<td>Danish (Conway et al. 2016^); Turkish (Kilincaslan et al. 2018^); Korean (Pai et al. 2015*); Spanish (Al-Halabi et al., 2016ab*)</td>
</tr>
</tbody>
</table>

* studies include adult samples; ^ studies include pediatric samples
<table>
<thead>
<tr>
<th>Predictor</th>
<th>Criterion</th>
<th>Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Greist et al. 2014</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None Reported</td>
<td>Actual, interrupted or aborted attempts</td>
<td>All patients: 0.8% incidence rate, N=4975 Psychiatric patients: 1.1% incidence rate, N=3184</td>
</tr>
<tr>
<td>Wish to Be Dead</td>
<td>Actual, interrupted or aborted attempts</td>
<td>OR= 6.21, 95% CI = 4.18 – 9.23, p &lt;0.001 OR= 4.99, 95% CI = 3.29 – 7.56, p &lt;0.001</td>
</tr>
<tr>
<td>Non-Specific Active Thoughts</td>
<td>Actual, interrupted or aborted attempts</td>
<td>OR= 6.69, 95% CI = 4.16 – 10.76, p &lt;0.001 OR= 5.53, 95% CI = 3.38-9.04, p &lt;0.001</td>
</tr>
<tr>
<td>Active with any methods (not plan) w/o intent to act</td>
<td>Actual, interrupted or aborted attempts</td>
<td>OR= 11.16, 95% CI = 7.43-16.76, p &lt;0.001 OR= 8.36, 95% CI = 5.44-12.84, p &lt;0.001</td>
</tr>
<tr>
<td>Active with Some Intent to Act, without specific plan</td>
<td>Actual, interrupted or aborted attempts</td>
<td>OR= 19.27, 95% CI = 12.97 – 28.63, p &lt;0.001 OR= 15.24, 95% CI = 10.07-23.09, p &lt;0.001</td>
</tr>
<tr>
<td>Active with specific plan and intent</td>
<td>Actual, interrupted or aborted attempts</td>
<td>OR= 25.53, 95% CI = 16.94 – 38.47, p &lt;0.001 OR= 18.70, 95% CI = 12.16 – 28.76, p &lt;0.001</td>
</tr>
<tr>
<td><strong>Posner et al. 2011</strong> (TASA study N=124, ages 12-18)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline worst-point</td>
<td>Attempts</td>
<td>OR=1.45, 95% CI=1.07-1.98, p=0.02</td>
</tr>
<tr>
<td>Actual, interrupted and aborted attempts</td>
<td>OR=1.34, 95% CI=1.05-1.70, p=0.02</td>
<td></td>
</tr>
<tr>
<td>Lifetime severity</td>
<td>Attemps</td>
<td>OR=1.43, 95% CI=0.99-2.05, p=0.05</td>
</tr>
<tr>
<td>Severity 4-5 (any intent to act)</td>
<td>Attempts</td>
<td>OR=3.26, 95% CI=1.02-10.45, p=0.047</td>
</tr>
<tr>
<td>Actual, interrupted and aborted attempts</td>
<td>OR= 3.26, 95% CI=1.07-7.12, p=0.036</td>
<td></td>
</tr>
<tr>
<td><strong>Horwitz et al. 2015</strong> (N=473, ages 15-24)</td>
<td>Ideation severity 1 to 5</td>
<td>Attempt</td>
</tr>
<tr>
<td>OR= 1.51, 95% CI= 1.24-1.84, p&lt;0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Arias et al. 2016</strong></td>
<td>Current ideation severity 4 or 5 (with intent to die)</td>
<td>Actual attempt or suicide 6 weeks post-ED visit</td>
</tr>
<tr>
<td>OR =1.70 95% CI 1.18-2.44, p =.004</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actual, interrupted, aborted attempts, suicide or preparatory behavior</td>
<td>OR =1.52 95%CI 1.23-1.86 p &lt; .001</td>
<td></td>
</tr>
<tr>
<td>Predictor</td>
<td>Criterion</td>
<td>Coefficients</td>
</tr>
<tr>
<td>----------------------------</td>
<td>----------------------------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>Attempt</td>
<td>Attempt</td>
<td>OR=4.80, 95% CI = 2.23-10.32, p&lt;0.001</td>
</tr>
<tr>
<td>NSSIB item</td>
<td>Attempt</td>
<td>OR=3.12, 95% CI = 1.36-7.19, p&lt;0.01</td>
</tr>
<tr>
<td>NSSIB item</td>
<td>Return ER visit</td>
<td>OR = 1.52; 95% CI, 1.08-2.12, p&lt;.05</td>
</tr>
<tr>
<td>Attempt</td>
<td></td>
<td>χ² = 4.131, df = 1, p = 0.04</td>
</tr>
<tr>
<td>Attempts</td>
<td>Re-attempt [short-term]</td>
<td>OR= 11.50, 95% CI= 1.66-79.65, p&lt;0.05</td>
</tr>
<tr>
<td>Attempt</td>
<td>Actual, interrupted or aborted attempts</td>
<td>OR=4.57, 95% CI = 3.6-5.7, p&lt;0.001</td>
</tr>
<tr>
<td>Interrupted Attempt</td>
<td>Actual, interrupted or aborted attempts</td>
<td>OR=5.55, 95% CI = 4.4-7.0, p&lt;0.001</td>
</tr>
<tr>
<td>Aborted Attempt</td>
<td>Actual, interrupted or aborted attempts</td>
<td>OR=5.09, 95% CI = 4.1-6.4, p&lt;0.001</td>
</tr>
<tr>
<td>Preparatory behavior</td>
<td>Actual, interrupted or aborted attempts</td>
<td>OR=5.69, 95% CI = 4.3-7.5, p&lt;0.001</td>
</tr>
</tbody>
</table>

**Madan et al. 2016**: (N=1,055 adult psych in-patients)

- **Most severe ideation within 72 hours of hospitalization**
- **Any suicide behavior within 6 months post hospitalization**
  - Psychiatric re-hospitalization within 6 months
  - \( r = 0.165, p < 0.01, N = 275 \)

**Conway et al. 2016**: (N=85 adolescents, age < 18, mean age=16.2)

- **Severity of ideation (1-5)**
- **Ideation with intent to act (4 or 5)**
- **Ideation intensity total score**
  - Any type of suicidal behavior at follow-up
    - OR= 1.66, 95% CI= 1.13-2.44, \( p < 0.05 \)
    - OR= 7.76, 95% CI= 1.66-36.23, \( p < 0.01 \)
    - OR= 1.27, 95% CI= 1.04-1.54, \( p < 0.05 \)
### Incremental Validity and Accuracy

<table>
<thead>
<tr>
<th>Study</th>
<th>Ideation Type</th>
<th>Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Brent et al. (2009):</strong> Treatment resistant, depressed adolescent suicide attempters (N=334, ages 12-18)</td>
<td>Higher rates of suicidal (20.8% vs. 8.8%, chi squared= 9.18, df=1, p&lt;0.002) and non-suicidal self-injury (17.6% vs. 2.2%, chi squared= 23.47, df=1, p&lt;0.001) detected with systematic monitoring</td>
<td></td>
</tr>
<tr>
<td><strong>Horwitz et al. (2015):</strong> Young adult psychiatric emergency patients (N=473, ages 15-24)</td>
<td>Suicidal ideation added incremental validity to the prediction of future suicide attempts beyond the past suicide attempt, $X^2 (1) = 7.54, p= .006$</td>
<td></td>
</tr>
<tr>
<td><strong>Brown et al. (2015):</strong> psychiatric ER patients (N=250)</td>
<td>18% (n=23) of patients with a suicide attempt in the past week misclassified or missed by clinical assessment.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agreement with clinical assessment for suicide attempts (K=0.76, p=&lt;.001)</td>
<td></td>
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<tr>
<td></td>
<td>Agreement with clinical assessment of non-suicidal self-injurious behavior (K=0.72, p=.001)</td>
<td></td>
</tr>
<tr>
<td><strong>Arias et al. (2013):</strong> 497 ER adult patients with suicidal thoughts or attempt(s)</td>
<td>41% increase in the detection of suicide attempts compared to chart reviews (59% vs. 18%, difference of 41%, 95% CI= 28-55, p&lt;0.001)</td>
<td></td>
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</tbody>
</table>

### Reliability - Suicidal Ideation
*(inter-rater and multi-method agreement)*

<table>
<thead>
<tr>
<th>Study</th>
<th>Ideation Type</th>
<th>Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Brent et al. (2009)</strong> (N=334, ages 12-18)</td>
<td><strong>suicidal ideation ranging from 0 to 5</strong> (from no ideation to suicidal ideation with intent and a clear plan) monitored weekly</td>
<td>ICC = .09, p&lt; 0.001</td>
</tr>
</tbody>
</table>
| **Kilincaslan et al. 2018** (N=213, ages 12-18) | **Inter-rater reliability for the most severe ideation scores in the last month and lifetime were good** | Lifetime κ = 0.92  
Recent  κ = 0.88 |
<p>| <strong>Youngstrom et al. (2015)</strong> | Accuracy calibrated against “missing gold standard” latent class-derived ideation and behavior categories | κ &gt; 0.7 |
| <strong>Hesdorffer et al. (2013)</strong> | Agreement between the MINI, C-SSRS and eC-SSRS for lifetime <strong>suicidal ideation</strong> | κ = 0.80, 95% CI = 0.72-0.89 |</p>
<table>
<thead>
<tr>
<th>Study</th>
<th>Methodology</th>
<th>Correlation/Reliability</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gwaltney et al. (2017) (N=86, ages &gt;18)</td>
<td>Equivalence analyses/multi-method agreement between IVR (interactive voice response) and tablet text-based eC-SSRS for most severe lifetime ideation</td>
<td>Correlation: 0.87, p&lt;0.001 ICC: κ = 0.89, p&lt;0.001</td>
<td></td>
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<tr>
<td></td>
<td>Equivalence analyses between IVR (interactive voice response) and tablet text-based eC-SSRS for most severe ideation in past 6 months</td>
<td>Correlation: 0.69, p&lt;0.001 ICC: κ = 0.79, p&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>Reliability - Suicidal Behavior</td>
<td></td>
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</tr>
<tr>
<td>Gwaltney et al. (2017) (N=86, ages &gt;18)</td>
<td>Equivalence analyses/multi-method agreement between IVR (interactive voice response) and tablet text-based eC-SSRS for lifetime Actual attempts</td>
<td>κ = 0.81, p&lt;0.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of lifetime actual attempts</td>
<td>κ = 0.81, p&lt;0.001</td>
<td></td>
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<tr>
<td></td>
<td>Actual attempts (recent-last 2 yrs)</td>
<td>κ = 0.73, p&lt;0.001</td>
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</tr>
<tr>
<td></td>
<td>Interrupted attempts (lifetime)</td>
<td>κ = 0.78, p&lt;0.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Interrupted attempts (recent-last 2 yrs)</td>
<td>κ = 0.762, p&lt;0.001</td>
<td></td>
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<tr>
<td></td>
<td>Aborted attempts (lifetime)</td>
<td>κ = 0.54, p&lt;0.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aborted attempts (recent-last 2 yrs)</td>
<td>κ = 0.74, p&lt;0.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Preparatory behaviors (lifetime)</td>
<td>κ = 0.77, p&lt;0.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Preparatory behaviors (recent-last 2 yrs)</td>
<td>κ = 0.89, p&lt;0.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non-suicidal, self-injurious behavior</td>
<td>κ = 0.73, p&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>Brent et al. (2009) (N=334, ages 12-18)</td>
<td>Inter-rater reliability for a rating of suicidal behavior, ranging from 0 to 5 (no behavior to multiple attempts during the assessment period) using the Columbia Classification Algorithm of Suicide Assessment</td>
<td>100% agreement</td>
<td></td>
</tr>
<tr>
<td>Kerr et al. (2014a,b) (N=155, ages 13-17)</td>
<td>Inter-rater agreement for distinction among actual, aborted, interrupted attempts, preparatory acts and any other act</td>
<td>κ = 0.88; κ = .91</td>
<td></td>
</tr>
</tbody>
</table>
### References for Psychometric Evidence

Linguistic and Psychometric Validation of the C-SSRS Translations

- Al-Halabi, S., Fernández-Peláez, AD, Burón, P., Riesco, E., Rodríguez-Revuelta, J. Posner, K. Oquendo, M., García-Portilla, MP, Saiz, P. and Bobes, J (September, 2016). In Search of the Internal Structure of the Columbia Suicide Severity Rating Scale (C-SSRS): A Confirmatory Factor Analysis Approach. 16th European Symposium on Suicide Suicidal Behavior, Oviedo, Spain. [Spanish]

Columbia Suicide Severity Rating Scale Versions - Feasibility
(adapted versions)

C-SSRS Clinical Practice Screener

- Katz, I., Barry, C. N., Cooper, S. A., Kasprov, W. J., & Hoff, R. A. (2019). Use of the Columbia-Suicide Severity Rating Scale (C-SSRS) in a large sample of Veterans receiving mental health services in the Veterans Health Administration. Suicide and Life-Threatening Behavior.


C-SSRS Self-Report

(“paper” non-adaptive version, i.e. not eCSSRS)


The Columbia Suicide Severity Rating Scale (C-SSRS): Diagnostic and Treatment-Monitoring Effectiveness

<table>
<thead>
<tr>
<th>C-SSRS as an Effective Measure for Diagnosis &amp; Treatment</th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Veterans</strong></td>
<td>Legarreta et al., 2015</td>
<td>The association of specific PTSD symptoms with suicidal ideation and behavior suggested individual PTSD symptoms as treatment target for reducing suicidal outcomes.</td>
</tr>
<tr>
<td><strong>Veterans</strong></td>
<td>Harvey et al., 2018</td>
<td>A lifetime history of suicidal ideation and behavior was higher among the Vets with Bipolar Disorder (82.3%, N=5414) than Schizophrenia (69.9%, N=3942) The highest risk was found for patients with multiple psychiatric comorbidities (OR = 2.61 for ideation; OR = 3.82 for behavior). Clinical factors (e.g., psychiatric comorbidity) contributed more of the variance in the predictive model than demographic factors.</td>
</tr>
<tr>
<td><strong>Medication Treatment</strong></td>
<td>Ionescu et al. (2016)</td>
<td>Ketamine treatment effective for suicidal ideation (SI) in adults SI severity improved independent of acute decrease in depression and SI intensity improved even if SI severity un-remitted</td>
</tr>
<tr>
<td></td>
<td>Prakash et al. (2012)</td>
<td>Duloxetine was effective in treating suicidal ideation among children ages 7-17 with major depression Distinguished children with improvement and deterioration</td>
</tr>
</tbody>
</table>

C-SSRS Training Program Evaluations

C-SSRS Representative Publications: Demographic and Clinical Populations, Settings, Treatment Efficacy and Assessment Guidelines

Pediatric Populations by Age Group

Ages 5-11


Ages 6-12


Ages 6-17


Ages 6-18


Ages 7-13


Ages 7-17


Ages 7-18 (for the pediatric sub-sample; also includes studies with adults)


Ages 8-12


Ages 10-18


Ages 11-17


Ages 12-17


Ages 12-17.5


Ages 12-18


**Ages 13-17**


**Ages 13-19**


**Ages 14-19**


Studies with Adolescents and Young Adults

**Ages 13-25**

**Ages 14-39**

**Ages 15-20**

**Ages 15-24**

**Ages 20-22**

Demographic Groups

**Asian Americans**

School Protocols
Medical Specialties

Neurology


Oncology


Psoriasis


Psychiatric Conditions

Alzheimer’s


ADHD


**Alcohol**

**Autism**

**Bipolar Depression**

**Complicated Grief**

**Generalized Anxiety Disorder (GAD)**

**Perinatal/Postpartum Depression**

**Psychosis/Schizophrenia**

### PTSD

### Sleep

### Healthcare Systems

### Outpatient Settings

#### Outpatient Psychiatry

#### Integrated Primary Care

### Veterans
Forensic Settings

- SEE ALSO “JUVENILE JUSTICE”

Juvenile Justice


Emergency Departments


In-Patient Psychiatric Settings


Mobile Crisis


Telemedicine


Treatment Efficacy for Suicidal Outcomes


**Regulatory Guidelines for Treatment & Assessment of Suicidal Outcomes**


**Reviews of Suicide Risk Assessment Tools**


**Cross-Cultural Settings**

*Latin America (Spanish)*


*Australia*


*China*


*Croatia*


*Ethiopia*

France

Germany

Hungary

Indonesia

India

Korea

Spain

Sri Lanka