Assessment of Suicide Risk: New Directions in Measurement and Prediction

Matthew K. Nock
Harvard University
“There is but one truly serious philosophical problem, and that is suicide. Judging whether life is or is not worth living amounts to answering the fundamental question of philosophy.

All the rest—whether or not the world has three dimensions, whether the mind has nine or twelve categories—comes afterwards. These are games; one must first answer.”

--Albert Camus, *The Myth of Sisyphus*
Why Focus on Suicide?

Public Health Perspective
• ~1 million suicide deaths annually; 1 every 40 seconds
• ~38,000 deaths each year in US
• >5x as many suicides as HIV/AIDS deaths, >2x homicides
• 10th leading cause of death, 3rd among adolescents/young adults

Clinical Perspective
• 97% of clinical psychology students see ≥ 1 suicidal patient
• 25% of psychologists and 50% of psychiatrists lose patient to suicide (Kleespies & Dettmer, 2000)
1. Who is at risk for suicidal behavior?
   (using findings from epidemiology to improve prediction)

2. What do suicidal thoughts look like?
   (using real-time monitoring to improve understanding and prediction)

3. How can we better measure the suicidal mind?
   (using findings from psychological science to improve detection and prediction)
Who is at risk for suicidal behavior?

• What is the prevalence of suicide ideation, plans, and attempts?
• What are the onset, course, and risk factors?
Who is at risk for suicidal behavior?
Who is at risk for suicidal behavior?

- What is the prevalence of suicide ideation, plans, and attempts?
- What are the onset, course, and risk factors?

- **WHO World Mental Health Survey Initiative (Kessler et al):** nationally representative survey in 26 countries ($N \sim 150,000$)

<table>
<thead>
<tr>
<th></th>
<th>Prevalence Estimate</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suicide Ideation</td>
<td>9.2%</td>
<td>(3.1&lt;sub&gt;China&lt;/sub&gt; - 15.9&lt;sub&gt;New Zealand&lt;/sub&gt;)</td>
</tr>
<tr>
<td>Suicide Plan</td>
<td>3.1%</td>
<td>(0.7&lt;sub&gt;Italy&lt;/sub&gt; - 5.6&lt;sub&gt;New Zealand&lt;/sub&gt;)</td>
</tr>
<tr>
<td>Suicide Attempt</td>
<td>2.7%</td>
<td>(0.9&lt;sub&gt;Italy&lt;/sub&gt; - 5.0&lt;sub&gt;USA&lt;/sub&gt;)</td>
</tr>
</tbody>
</table>

$N = 84,850; 17$ Countries

*Nock et al. (2008). British Journal of Psychiatry*
Who is at risk for suicidal behavior?

• Although variability in prevalence of suicidal outcomes, there is consistency in:
  – Age-of-onset (AOO) of suicidal outcomes

Nock et al. (2008). British Journal of Psychiatry
Onset of Suicide Ideation

Fig. DS1  Cumulative age-of-onset distribution for suicide ideation in each country

Nock et al. (2008). British Journal of Psychiatry
Who is at risk for suicidal behavior?

- Although variability in prevalence of suicidal outcomes, there is consistency in:
  - Age-of-onset (AOO) of suicidal outcomes
  - Conditional probabilities of transition from ideation to plans (33.6%) and attempts (29.0%)
  - Speed of transition from ideation to plans and attempts

Nock et al. (2008). British Journal of Psychiatry
Speed of Transition to Suicide Attempts

Fig. DS2  Conditional, cumulative speed of transition from ideation to attempt in each country

Nock et al. (2008). British Journal of Psychiatry
Who is at risk for suicidal behavior?

- Although variability in prevalence of suicidal outcomes, there is consistency in:
  - Age-of-onset (AOO) of suicidal outcomes
  - Conditional probabilities of transition from ideation to plans (33.6%) and attempts (29.0%)
  - Speed of transition from ideation to plans and attempts
  - Risk factors for suicide ideation, plans, and attempts
    - Female, younger age, unmarried
    - Presence of mental disorders

Nock et al. (2008). British Journal of Psychiatry
Who is at risk for suicidal behavior?

<table>
<thead>
<tr>
<th>Disorder category</th>
<th>Ideation OR (95% CI)</th>
<th>Plan OR (95% CI)</th>
<th>Attempt OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any mood disorder</td>
<td>4.4* (4.0 - 4.8)</td>
<td>5.7* (5.0 - 6.6)</td>
<td>5.6* (4.8 - 6.5)</td>
</tr>
<tr>
<td>Any anxiety disorder</td>
<td>3.3* (3.1 - 3.6)</td>
<td>4.3* (3.8 - 4.8)</td>
<td>4.4* (3.9 - 5.0)</td>
</tr>
<tr>
<td>Any impulse-control disorder</td>
<td>3.7* (3.2 - 4.2)</td>
<td>4.7* (3.8 - 5.8)</td>
<td>5.1* (4.1 - 6.2)</td>
</tr>
<tr>
<td>Any substance use disorder</td>
<td>2.8* (2.5 - 3.1)</td>
<td>4.1* (3.5 - 4.8)</td>
<td>4.2* (3.6 - 5.0)</td>
</tr>
<tr>
<td>Any disorder</td>
<td>4.0* (3.7 - 4.3)</td>
<td>5.8* (5.1 - 6.5)</td>
<td>6.1* (5.3 - 7.0)</td>
</tr>
<tr>
<td>Exactly 1 disorder</td>
<td>1.1 (1.0 - 1.2)</td>
<td>0.9 (0.8 - 1.1)</td>
<td>0.9 (0.8 - 1.1)</td>
</tr>
<tr>
<td>Exactly 2 disorders</td>
<td>2.3* (2.1 - 2.5)</td>
<td>2.2* (1.9 - 2.6)</td>
<td>2.1* (1.8 - 2.5)</td>
</tr>
<tr>
<td>3+ disorders</td>
<td>6.1* (5.6 - 6.6)</td>
<td>8.9* (7.8 - 10.1)</td>
<td>9.0* (8.0 - 10.2)</td>
</tr>
</tbody>
</table>

*OR significant at the 0.05 level, 2-sided test
Predictors of Transition from Suicide Ideation to Attempt

<table>
<thead>
<tr>
<th></th>
<th>Suicide Ideation</th>
<th>Attempts among Ideators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression (MDD)</td>
<td>2.3*</td>
<td>1.0</td>
</tr>
<tr>
<td>Anxiety (PTSD)</td>
<td>1.5*</td>
<td>2.4*</td>
</tr>
<tr>
<td>Conduct (CD)</td>
<td>1.5*</td>
<td>2.2*</td>
</tr>
<tr>
<td>Alcohol (Abuse/Dep)</td>
<td>1.8*</td>
<td>2.9*</td>
</tr>
</tbody>
</table>

Values are ORs from multivariate survival models predicting ideation in the total sample (column 1), and unplanned attempts among ideators (column 2) in the NCS-R. Models included 16 disorders—only 4 shown here.

Nock et al. (2010). *Molecular Psychiatry*
Nock et al. (2014). *JAMA Psychiatry*
Who is at risk for suicidal behavior?

- Although variability in prevalence of suicidal outcomes, there is consistency in:
  - Average age-of-onset of suicidal outcomes
  - Conditional probabilities of transition from ideation to plans (33.6%) and attempts (29.0%)
  - Speed of transition from ideation to plans and attempts
  - Risk factors for suicide ideation, plans, and attempts
    - Female, younger age, unmarried
    - Presence of mental disorders

- Other analyses have examined:
  - Risk factors: life events, chronic medical conditions, family history
  - Protective factors: social, family, and spiritual factors
  - Treatment utilization and barriers to treatment
Focus on Adolescence

- National Comorbidity Survey, Adolescent Supplement (NCS-A)
  - Nationally representative sample of 10,148 Rs 13-18 yrs old

- Risk factors: Similar to adults
- Lower risk with: Living with biological parents and siblings
- Treatment: 55-67% of suicidal adolescents had prior tx

Nock et al. (2013). JAMA Psychiatry
Predictive modeling of suicide attempt

- \( N=5,692 \) respondents in NCS-R (retrospective self-report)
- Predictors included: Prior SA and 0-11 count of other risk factors

<table>
<thead>
<tr>
<th>Risk Group</th>
<th>Distribution</th>
<th>Probability of Attempt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very low</td>
<td>19.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Low</td>
<td>51.1%</td>
<td>3.5%</td>
</tr>
<tr>
<td>Intermediate</td>
<td>16.2%</td>
<td>21.3%</td>
</tr>
<tr>
<td>High*</td>
<td>13.7%</td>
<td>78.1%</td>
</tr>
</tbody>
</table>

*High risk group accounted for 67.1% of all suicide attempts in sample

- Final AUCs: .74-.80
- Further developing “concentration of risk” approach in different settings using data-mining and predictive modeling to improve accuracy


Predicting suicidal behavior

1. Who is at risk for suicidal behavior?
   (using findings from epidemiology to improve prediction)

2. What do suicidal thoughts look like?
   (using real-time monitoring to improve understanding and prediction)

3. How can we better measure the suicidal mind?
   (using findings from psychological science to improve detection and prediction)
What do suicidal thoughts look like?

- Self-injurious thoughts and behaviors are transient phenomena and rarely occur *during* assessment.

- Prior assessment methods rely on long-term, retrospective, aggregate reports:
  - “How many times in your life have you ____”
  - “How intense were your thoughts of ____”

- Basic characteristics of SITB as they occur naturally are unknown:
  - Exactly how frequent are self-injurious thoughts and behaviors?
  - How long do they last?
  - In what contexts do they most often occur?
  - What predicts transition from thought to action?
Real-Time Monitoring

Examine natural occurrence of self-destructive thoughts and behaviors among self-injurious adolescents and young adults using electronic diary assessment

Questions

(1) **Feasibility:** What is rate of use and compliance among adolescent self-injurious population?

(2) **Characteristics:** What is frequency, intensity, and duration of self-destructive thoughts and behaviors?

(3) **Context:** In what contexts do these thoughts occur? What factors predict transition from thought to action?

(4) **Function:** Why do adolescents engage in these behaviors?

Method

Participants
• 30 adolescents from local clinics and the community with recent history of non-suicidal self-injury (NSSI)

• Age: 12-19 \( M = 17.3 \)

• Sex: 26 female 86.7%

• Ethnicity: 26 White 86.7%

• Diagnostic status:
  Mood disorder = 53.3%
  Anxiety disorder = 56.7%
  Substance use disorder = 20.0%
  Eating disorder = 16.7%

Procedures

- Participants consented and were trained during a brief lab-session and left lab with diary, software, and manual

- Entries were prompted twice per day for 14 days, and additional entries for any self-destructive thoughts or behaviors

- Uploaded data daily to secure server, tracked by lab staff, and returned to lab for conclusion and debriefing
Results: Feasibility

• 100.0% (30/30) participants logged over 14 days period

• 83.3% (25/30) completed 2+ entries per day (range 28-108)
  – 1227 Observations/ entries
  – 40.9 entries per person on average (2.9 per day)

## Feasibility

<table>
<thead>
<tr>
<th></th>
<th>Thoughts</th>
<th>Behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSSI</td>
<td>344</td>
<td>104</td>
</tr>
<tr>
<td>Suicide</td>
<td>26</td>
<td>0</td>
</tr>
<tr>
<td>Alcohol use</td>
<td>103</td>
<td>42</td>
</tr>
<tr>
<td>Drug use</td>
<td>128</td>
<td>53</td>
</tr>
<tr>
<td>Binge</td>
<td>89</td>
<td>56</td>
</tr>
<tr>
<td>Purge</td>
<td>68</td>
<td>13</td>
</tr>
<tr>
<td>Impulsive spending</td>
<td>44</td>
<td>13</td>
</tr>
<tr>
<td>Risky sex</td>
<td>31</td>
<td>7</td>
</tr>
<tr>
<td>Other destructive</td>
<td>102</td>
<td>39</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>935</td>
<td>327</td>
</tr>
</tbody>
</table>

## Feasibility

<table>
<thead>
<tr>
<th></th>
<th>Thoughts</th>
<th>Behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSSI</td>
<td>344</td>
<td>104</td>
</tr>
<tr>
<td>Suicide</td>
<td>26</td>
<td>0</td>
</tr>
<tr>
<td>Alcohol use</td>
<td>103</td>
<td>42</td>
</tr>
<tr>
<td>Drug use</td>
<td>128</td>
<td>53</td>
</tr>
<tr>
<td>Binge</td>
<td>89</td>
<td>56</td>
</tr>
<tr>
<td>Purge</td>
<td>68</td>
<td>13</td>
</tr>
<tr>
<td>Impulsive spending</td>
<td>44</td>
<td>13</td>
</tr>
<tr>
<td>Risky sex</td>
<td>31</td>
<td>7</td>
</tr>
<tr>
<td>Other destructive</td>
<td>102</td>
<td>39</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>935</strong></td>
<td><strong>327</strong></td>
</tr>
</tbody>
</table>

## Frequency

<table>
<thead>
<tr>
<th></th>
<th>NSSI Thoughts</th>
<th>Suicidal Thoughts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who had them?</td>
<td>93.3% (28/30)</td>
<td>33.3% (10/30)</td>
</tr>
<tr>
<td>Range</td>
<td>1-34 thoughts</td>
<td>1-8 thoughts</td>
</tr>
<tr>
<td>Mean</td>
<td>12.3 per person</td>
<td>2.6 per person</td>
</tr>
<tr>
<td></td>
<td>(0.9 per day)</td>
<td>(1.3 per week)</td>
</tr>
</tbody>
</table>

## Co-Occurrence

<table>
<thead>
<tr>
<th>% of time NSSI thoughts co-occur with thoughts of:</th>
<th>% of time suicidal thoughts co-occur with thoughts of:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug use</td>
<td>20.1%</td>
</tr>
<tr>
<td>Alcohol use</td>
<td>15.7%</td>
</tr>
<tr>
<td>Binge</td>
<td>15.7%</td>
</tr>
<tr>
<td>Purge</td>
<td>14.8%</td>
</tr>
<tr>
<td>Risky sex</td>
<td>6.4%</td>
</tr>
<tr>
<td>Impulsive spending</td>
<td>5.5%</td>
</tr>
<tr>
<td>Suicide</td>
<td>3.2%</td>
</tr>
</tbody>
</table>

Co-occurrence of other self-destructive thoughts did not predict NSSI behavior

# Severity of Thoughts

“How intense was the thought?”

<table>
<thead>
<tr>
<th></th>
<th>NSSI Thought</th>
<th>Suicidal Thought</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very severe</td>
<td>21.4%</td>
<td>3.8%</td>
</tr>
<tr>
<td>Severe</td>
<td>27.3%</td>
<td>7.7%</td>
</tr>
<tr>
<td>Moderate</td>
<td>32.3%</td>
<td>53.8%</td>
</tr>
<tr>
<td>Mild</td>
<td>17.8%</td>
<td>30.8%</td>
</tr>
<tr>
<td>Not present</td>
<td>1.2%</td>
<td>3.8%</td>
</tr>
</tbody>
</table>

*Greater intensity is predictive of NSSI
OR= 4.6 (2.7-7.8)

# Duration of Thoughts

“How long did the thought last?”

<table>
<thead>
<tr>
<th></th>
<th>NSSI Thoughts</th>
<th>Suicidal Thoughts</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;5 seconds</td>
<td>8.4%</td>
<td>0.0%</td>
</tr>
<tr>
<td>5-60 seconds</td>
<td>20.6%</td>
<td>11.5%</td>
</tr>
<tr>
<td>1-30 minutes</td>
<td>39.5%</td>
<td>46.2%</td>
</tr>
<tr>
<td>30-60 minutes</td>
<td>17.7%</td>
<td>15.4%</td>
</tr>
<tr>
<td>1-5 hours</td>
<td>11.0%</td>
<td>15.4%</td>
</tr>
<tr>
<td>&gt;5 hours</td>
<td>2.6%</td>
<td>11.5%</td>
</tr>
</tbody>
</table>

*Shorter duration is predictive of NSSI
OR= 0.8 (0.7-0.9)
### What were you doing?

<table>
<thead>
<tr>
<th>Activity</th>
<th>NSSI Thoughts</th>
<th>Suicidal Thoughts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socializing</td>
<td>28.2%</td>
<td>34.6%</td>
</tr>
<tr>
<td>Resting</td>
<td>22.1%</td>
<td>19.2%</td>
</tr>
<tr>
<td>Listen to music</td>
<td>14.8%</td>
<td>30.8%</td>
</tr>
<tr>
<td>Doing homework</td>
<td>14.2%</td>
<td>7.7%</td>
</tr>
<tr>
<td>TV/Video games</td>
<td>13.7%</td>
<td>7.7%</td>
</tr>
<tr>
<td>Recreational activities</td>
<td>12.2%</td>
<td>3.8%</td>
</tr>
<tr>
<td>Eating</td>
<td>11.9%</td>
<td>7.7%</td>
</tr>
<tr>
<td>Using drugs</td>
<td>3.5%</td>
<td>3.8%</td>
</tr>
<tr>
<td>Using alcohol</td>
<td>2.9%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

None predicted engagement in NSSI.
What were you feeling?

<table>
<thead>
<tr>
<th>NSSI Thought</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sad</td>
<td>38.5%</td>
</tr>
<tr>
<td>Overwhelmed</td>
<td>37.3%</td>
</tr>
<tr>
<td>Scared</td>
<td>31.5%</td>
</tr>
<tr>
<td>Angry</td>
<td>29.7%</td>
</tr>
<tr>
<td>Self-hatred</td>
<td>28.0%</td>
</tr>
<tr>
<td>Anger at another</td>
<td>26.8%</td>
</tr>
<tr>
<td>Rejected</td>
<td>20.7%</td>
</tr>
<tr>
<td>Numb</td>
<td>12.8%</td>
</tr>
<tr>
<td>Happy</td>
<td>3.5%</td>
</tr>
</tbody>
</table>

### What were you feeling?

<table>
<thead>
<tr>
<th>NSSI Thought</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sad</td>
<td>38.5%</td>
</tr>
<tr>
<td>Overwhelmed</td>
<td>37.3%</td>
</tr>
<tr>
<td>Scared</td>
<td>31.5%</td>
</tr>
<tr>
<td>Angry</td>
<td>29.7%</td>
</tr>
<tr>
<td>Self-hatred</td>
<td>28.0%</td>
</tr>
<tr>
<td>Anger at another</td>
<td>26.8%</td>
</tr>
<tr>
<td>Rejected</td>
<td>20.7%</td>
</tr>
<tr>
<td>Numb</td>
<td>12.8%</td>
</tr>
<tr>
<td>Happy</td>
<td>3.5%</td>
</tr>
</tbody>
</table>

Four feelings significantly increased the odds of engaging in NSSI

*Nock, Prinstein & Sterba (2009). J Abnormal Psychology*
What were you feeling?

<table>
<thead>
<tr>
<th>Feeling</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sad</td>
<td>57.7%</td>
</tr>
<tr>
<td>Overwhelmed</td>
<td>46.2%</td>
</tr>
<tr>
<td>Scared</td>
<td>30.8%</td>
</tr>
<tr>
<td>Angry</td>
<td>50.0%</td>
</tr>
<tr>
<td>Self-hatred</td>
<td>50.0%</td>
</tr>
<tr>
<td>Anger at another</td>
<td>53.8%</td>
</tr>
<tr>
<td>Rejected</td>
<td>46.2%</td>
</tr>
<tr>
<td>Numb</td>
<td>23.1%</td>
</tr>
<tr>
<td>Happy</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

- Need future studies following high-risk patients to better identify markers of imminent risk

Predicting suicidal behavior

1. Who is at risk for suicidal behavior?
   (using findings from epidemiology to improve prediction)

2. What do suicidal thoughts look like?
   (using real-time monitoring to improve understanding and prediction)

3. How can we better measure the suicidal mind?
   (using findings from psychological science to improve detection and prediction)
Assessment of Suicidal Thoughts

• We can identify high risk groups and high risk periods, but how to know who among those groups is considering suicide?

• Current assessment methods are limited by reliance on explicit report

• Problematic because:
  – Motivation to conceal suicidal thoughts
  – Suicidal thoughts are often transient in nature
  – May lack conscious awareness of current risk or ability to report on it

• High risk period for suicide death is immediately post-discharge (Qin & Nordentoft, 2005)

• 78% of patients who die by suicide in hospital deny thoughts/intent (Busch, Fawcett & Jacobs, 2003)

• Need method for assessing risk not reliant on self-report
Assessment of Suicidal Thoughts

I want to kill myself.

“I don’t want to kill myself.”
Measuring Implicit Cognitions

• Implicit cognitions are those not reliant on introspection

• Implicit Association Test (IAT) by Greenwald et al. 1998

• Uses reaction time to measure strength of association between concepts and attributes
  – Reliable and resistant to attempts to ‘fake good’
  – Sensitive to clinical change in treatment
  – Predictive of future behavior

• Can a measure of implicit associations about self-injury or death provide a behavioral marker for suicide risk?
Cutting
Me

No Cutting
Not me
Cutting
Not Me

No Cutting
Me
SI-IAT

\[ D = \text{Cutting/Not me (and No cutting/Me)} - \text{Cutting/Me (and No cutting/Not Me)} \]

Standard deviation of response latency for all trials

+ \( D \) = faster responding (stronger association) when “Cutting” and “Me” are paired

- \( D \) = faster responding (stronger association) when “Cutting” and “Not me” are paired

See: Greenwald, Nosek & Banaji (2003), JPSP
Nosek, Greenwald & Banaji (2005), SPSP
SI-IAT

- Administered to adolescents with recent history of NSSI \((n=53)\) vs. controls \((n=36)\) in lab setting recruited from clinics and community

\[
\begin{array}{cc}
\text{No NSSI} & \text{NSSI} \\
(N=36) & (N=53)
\end{array}
\]

\[t=5.60, \ d=1.20, \ p < .001\]

Can the SI-IAT distinguish among non-suicidal \( (n=38) \), suicide ideators \( (n=37) \), and suicide attempters \( (n=14) \)?

\[ F_{(2,85)} = 13.23, \ p < .001 \]
Does the SI-IAT add incrementally to the prediction of SI and SA?

After controlling for demographic (age, sex, ethnicity) and psychiatric (disorders, severity) risk factors, SI-IAT significantly predicted:

*Baseline SI  \((\chi^2_1 = 5.38, p<.05)\)
*Baseline SA  \((\chi^2_1 = 6.44, p<.05)\)
**6-Month SI  \((\chi^2_1 = 4.79, p<.05)\)

SI-IAT

Suicide attempt within 6 months

$t_{71} = 2.18$, $d = .52$, $p = .032$

Suicide-IAT

- Can a suicide IAT distinguish between adults presenting to the ED for a suicide attempt (n=43) versus other psychiatric emergency (n=114)?

*NAs had a stronger implicit death ID (t=2.46, p<.05)
*IAT predicted SA status beyond all other clinical predictors

**Suicide-IAT**

*Those with death ID were more likely to make an attempt after discharge*

*IAT added incrementally to prediction of SA beyond diagnosis, clinician, patient, and SSI (OR=5.9, \( p<.05 \))*

*Sensitivity= .50; Specificity= .81*

---

*Replication in ED in Alberta, Canada (n=107)*

*IAT added incrementally to the prediction of self-harm at 3-month follow-up (OR=5.1, \( p<.05 \))*

*Sensitivity= .43; Specificity= .79*

---


Suicide-Related Cognition

• Important to examine other tests of suicide-related cognition
  – Those considering suicide will show greater attentional bias for suicide-related information
  
  – Suicide Stroop
Suicide Stroop
Suicide Stroop

suicide
Suicide Stroop

• Does the suicide Stroop distinguish between suicide attempters \((n=68)\) and non-attempters presenting to the ED \((n=56)\)?

*SAs had a stronger attentional bias toward suicide \((t=2.37, p<.05)\)

*Stroop interference predicts 6-month SA beyond all other clinical predictors

Current Directions

- Replication of IAT and Stroop effects
  - E.g., Cha et al. (in prep); Glenn et al. (in prep)

- Project Implicit Mental Health (PIMH)
  - www.implicitmentalhealth.com

- Examine usefulness in prediction and decision-making

- Develop tests of other cognitive processes associated with suicidal behavior

- Develop interventions that target implicit cognition for change and test potential decreases in suicidal thinking
Conclusions & Directions

• Suicidal behavior is prevalent and looks similar cross-nationally
  – Development of predictive models for suicidal behavior and death

• Suicidal thoughts are transient and triggered by range of feelings
  – Further study of real-time experience and markers of imminent risk

• Behavioral tests of suicidal thoughts/risk
  – Further innovations are needed to improve assessment and treatment
Acknowledgements

**LCDR – Harvard**
Christine Cha, AM
Charlene Deming, EdM
Joe Franklin, PhD
Jeff Glenn
Cassie Glenn, PhD
Julia Harris
Adam Jaroszewski
Mark Knepley
Bethany Michel, AM
Alex Millner, AM
Sara Slama
Tara Deliberto, MA
Michael Lee
Halina Dour, MA
Jeremy Jamieson, Ph.D.

**Collaborators**
Mahzarin Banaji (Harvard)
Ronald Kessler (Harvard Medical School)
Brian Marx (VA Boston)
Wendy Mendes (UC, San Francisco)
Mitch Prinstein (UNC, Chapel Hill)

**Funding Support**
Department of Defense
MacArthur Foundation
National Institutes of Health (NIMH, NICHD)
Norlien Foundation
United States Army

And many others…!
Assessment of Suicide Risk: New Directions in Measurement and Prediction

Matthew K. Nock
Harvard University