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**Background**
Understanding what makes adolescence a period of unique risk—for some more than others—is of considerable public health relevance, given that morbidity and mortality during this stage of life are largely the result of health risk behavior. Stemming from research in developmental neuroscience (e.g., Steinberg, 2008; Casey, Getz, & Galvan, 2008), theoretical work in this area has crystallized on two dimensions that are thought to contribute to adolescents’ greater propensity for risk-taking: reward sensitivity and impulse control. To assess these constructs, researchers have drawn on both self-report (survey) and behavioral (laboratory) measures. However, it is unclear whether different measurement modalities indeed tap the same underlying constructs. Few studies have examined how laboratory tasks of decision-making overlap with each other, with self-report measures, and with general cognitive ability. The current study examined two research questions:

- What is the phenotypic overlap of behavioral and self-report measures of impulsivity, sensation-seeking, and reward sensitivity?
- How do these constructs predict “real world” delinquent behavior?

**Methods**
**Participants:** 338 adolescents (52% male), ages 14-19 (M_age = 15.89, SD = 1.56), recruited from the Texas Twin Project (Harden, Tucker-Drob, & Tackett, 2013). Sixty-one percent were non-Hispanic White, 23% were Hispanic/Latino, 11% were African American, and 5% were of other race/ethnicity.

**Procedure:** Adolescents completed behavioral and self-report measures of impulsivity, sensation-seeking, and reward sensitivity as well as an IQ test during a 3 hour lab session.

**Measures:**
- **Self-reported impulsivity** was assessed with the UPPS Impulsivity Scale (Whiteside & Lynam, 2001), a self-report measure that distinguishes four facets of impulsivity: sensation-seeking, premeditation, perseverance, premeditation (failure to plan ahead), and negative urgency (the tendency to act without thinking when experiencing negative affect).
- **Behavioral measures** included the Tower of London (Shalllice, 1982), a test of strategic planning; the Iowa Gambling Task (Bechara, 2007), a measure of affective decision-making; the Balloon-Analogue Risk Task (Lejuez et al., 2002), a test of risky decision-making; and the Stoplight Game (Gardner & Steinberg, 2005), a simulated driving task that measures risky decision-making.
- **Intelligence (IQ)** was assessed with the Wechsler Abbreviated Scale of Intelligence (WASH-IV).
- **Delinquency** was assessed with a 36 item self-report survey.

**Results**
Consistent with a growing body of work supporting the dual systems model of risky decision-making (Steinberg, 2008; Casey et al., 2008;Ellingson, 2013; Harden & Tucker-Drob, 2011), a reward seeking factor, indicated by performance on two risky decision-making tasks and by self-reported sensation-seeking, was independent from both behavioral and self-report measures of cognitive control and ability. Impulsivity and reward seeking predict delinquency in a manner consistent with the dual systems model. However, their interactive effects were suppressed among adolescents with high cognitive ability. Future research should examine the genetic and/or environmental underpinnings of these associations. In addition, future research may reveal whether these findings generalize to a higher risk sample.

**Discussion**
These results illustrate the multidimensional nature of behavioral inhibition, a trait with relevance to developmental, clinical, cognitive, and personality psychologists. Laboratory measures of behavioral disinhibition show a great deal of task-specific variance and tap multiple cognitive and affective processes. Studies examining can benefit from using a multivariate measurement approach that combines self-report and behavioral assessments.

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**APPENDIX 7**

<table>
<thead>
<tr>
<th>Reward Seeking</th>
<th>Premed</th>
<th>Senseek</th>
<th>SLS</th>
<th>IGT</th>
<th>TOL</th>
<th>Age</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg Cognitive Ability</td>
<td>0.32</td>
<td>-0.33</td>
<td>-0.32</td>
<td>0.39</td>
<td>1.50</td>
<td>0.61</td>
<td>0.39</td>
</tr>
<tr>
<td>Avg Reward Seeking</td>
<td>0.32</td>
<td>0.39</td>
<td>0.61</td>
<td>0.39</td>
<td>0.32</td>
<td>-0.33</td>
<td>-0.32</td>
</tr>
<tr>
<td>Avg Premed</td>
<td>0.39</td>
<td>-0.32</td>
<td>0.61</td>
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<td>0.32</td>
<td>-0.33</td>
</tr>
<tr>
<td>Avg Senseek</td>
<td>1.50</td>
<td>0.39</td>
<td>0.61</td>
<td>0.32</td>
<td>0.39</td>
<td>0.32</td>
<td>-0.33</td>
</tr>
</tbody>
</table>

Values are standardized loadings and correlations, and residual variances. Balloon values are significant at p < .05. Impulsivity values show modest correlations. All analyses were conducted in JAMOVI (Buhrmester, 2016), using the “CUSTOM” option was used to control for the skewed distribution of mean delinquency scores and the CLUSTER option to control for (near) independence of non-observations.