## A Behavioral Genetic Analysis of Adolescent Sensation Seeking and Substance Use

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### Background

- Sensation Seeking is a personality trait that captures an individual’s drive to search for novel and intense experiences.
- Adolescence is the period during which most people experience their highest levels of sensation seeking.
- High levels of sensation seeking predict substance use, particularly among adolescents.
- Using a twin design to explore the environmental and genetic influences driving the co-occurrence of sensation seeking and substance use.

### Measures

- Zygosity: MZ or DZ
- Sensation Seeking: 8 items scored 1-5, maximum composite score of 40
- Substance Use: 11 substances, composite score 0-11, square root transformed 0-3.5

### Participants and Procedure

- 817 (mean age = 15.67 years, range = 13.45-20.11) adolescents from the Texas Twin Project
- Sensation Seeking and Substance Use measured using self-report survey

### Proportion of Shared Variance for Sensation Seeking and Substance Use

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<tr>
<th>Additive Genetic Overlap</th>
<th>Shared Environment Overlap</th>
<th>SU Unique Additive Genetic</th>
<th>SU Unique Shared Environment</th>
<th>SU Unique Non-Shared Environment</th>
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### Hypotheses

- Significant positive association between sensation seeking and substance use
- Moderate additive genetic (A), shared environmental (C), and non-shared environmental (E) influences for both sensation seeking and substance use
- Common genetic factors (A) that influence both sensation seeking and substance use

### Sensation Seeking: A: .49, C: .01 E: .50

### Substance Use: A: .46, C: .537, E: .004

### Bivariate Crosspaths: A_{12}: .22, C_{12}: .10

### Summary

- Significant positive correlation between sensation seeking and substance use ($r = .32, p < .001$)
- Moderate genetic (A), and non-shared environmental (E), influences for sensation seeking
- Moderate genetic (A), and shared environmental (C) influences for sensation seeking
- Significant overlap in variance driven by genetic factors (A)

### Conclusions

- Adolescent sensation seeking and substance use are related.
- Both sensation seeking and substance use are both independently heritable.
- Shared environmental influences (C) on sensation seeking and non-shared environmental influences (E) on substance use were approximately zero.
- The correlation between sensation seeking and substance use is primarily and significantly due to overlapping genetic influences

### References