

Demonstrating the Predictability of Involvement with the Justice System using Genome-wide Polygenic Scores in Three Cohorts

Ryan T. Motz

Hexuan Liu

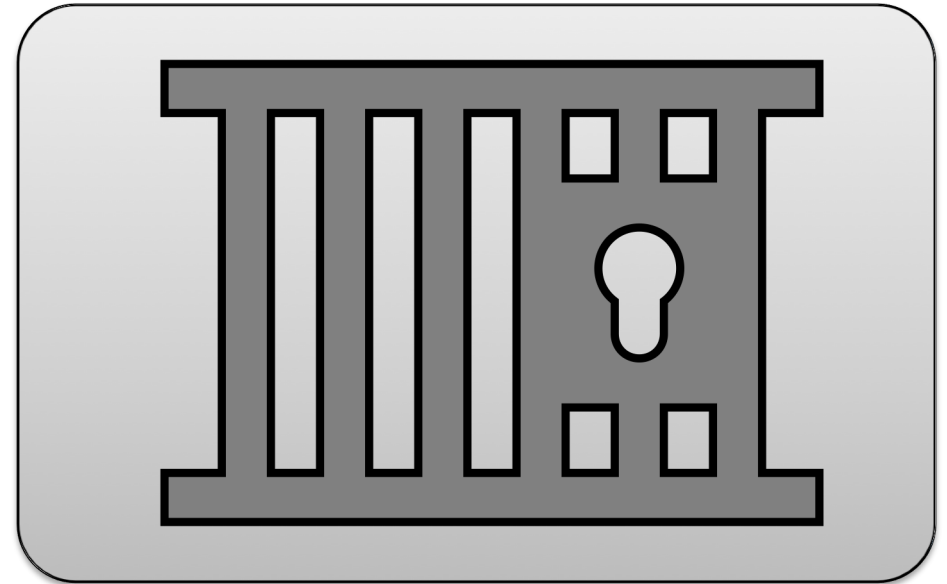
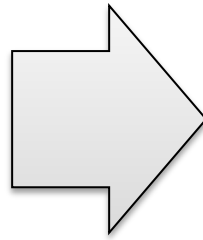
J.C. Barnes

Presented at the 10th Annual Integrating Genetics and the Social Sciences
Conference on October 3, 2019 in Boulder, CO

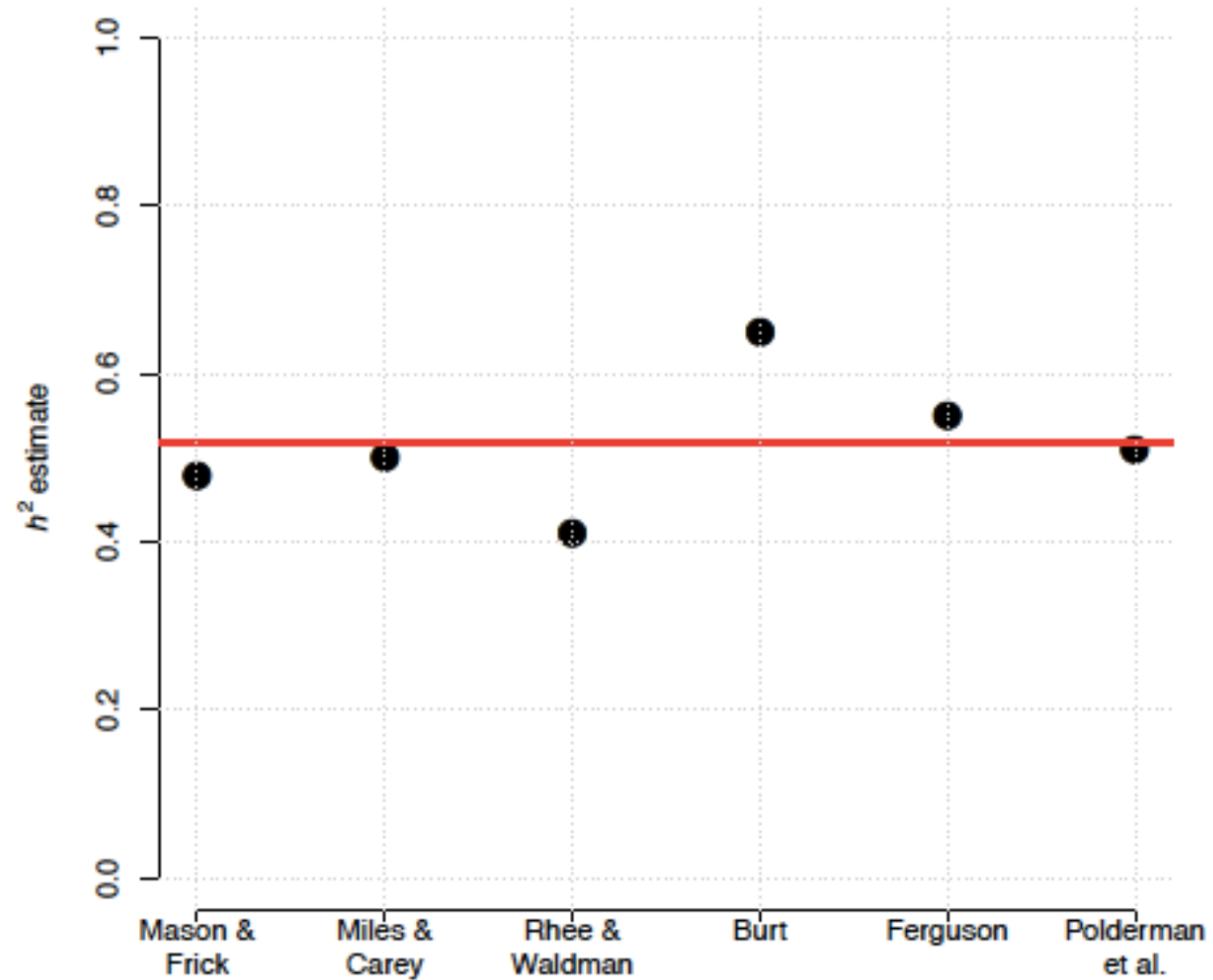
Contact with the Justice System

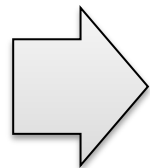
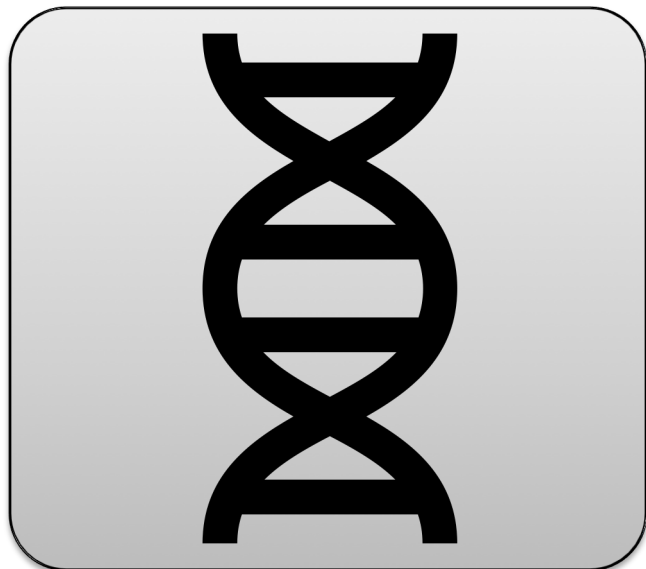
- Roughly 30% of Americans will—at some point in their lifetime—be arrested
- An estimated 6-to-10% will spend time in prison
- 2.2 million people—about 1 in 110 adults—are incarcerated on any given day

Criminal Conduct
Antisocial Behavior
Conduct Problems
Externalizing Behaviors
Low Self-Control

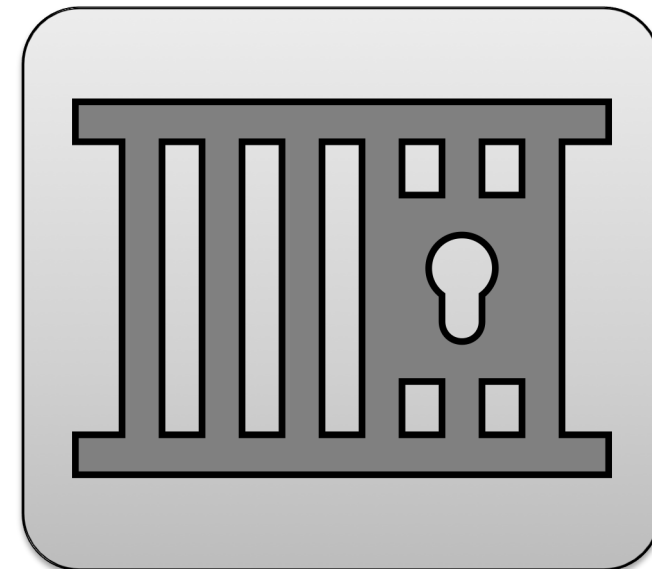
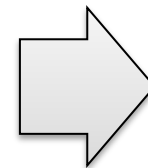


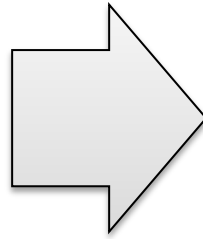
Meta-Analyses on the h^2 of Antisocial Behavior





Criminal Conduct
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Criminal Conduct
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Genome-Wide Association Studies of a Broad Spectrum of Antisocial Behavior

Discovery of the first genome-wide significant risk loci for attention deficit/hyperactivity disorder

Genome-wide analysis identifies 12 loci influencing human reproductive behavior

JAMA Psychiatry | [Original Investigation](#)

Genome-Wide Association Studies of a Broad Spectrum of Antisocial Behavior

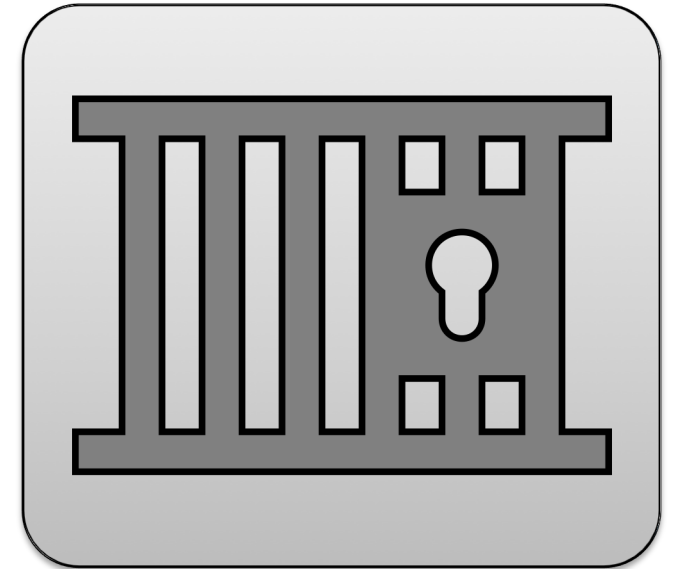
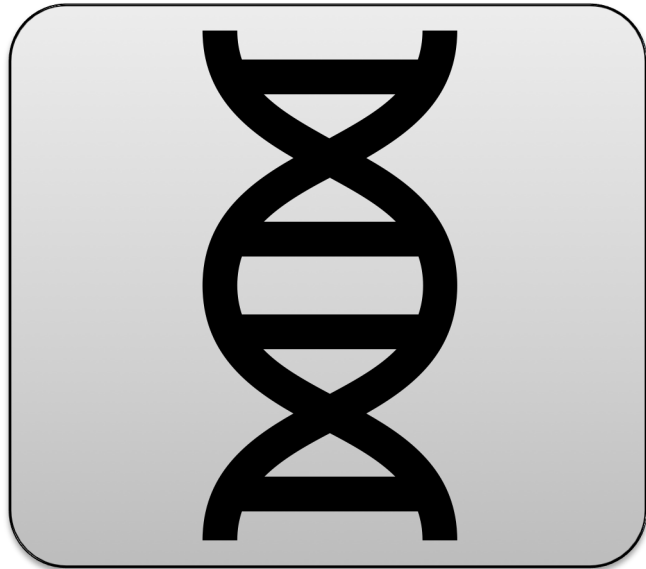
RESEARCH ARTICLE

AMERICAN JOURNAL OF
medical genetics
Neuropsychiatric Genetics

PART
B

A Genome-Wide Approach to Children's Aggressive Behavior: *The EAGLE consortium*

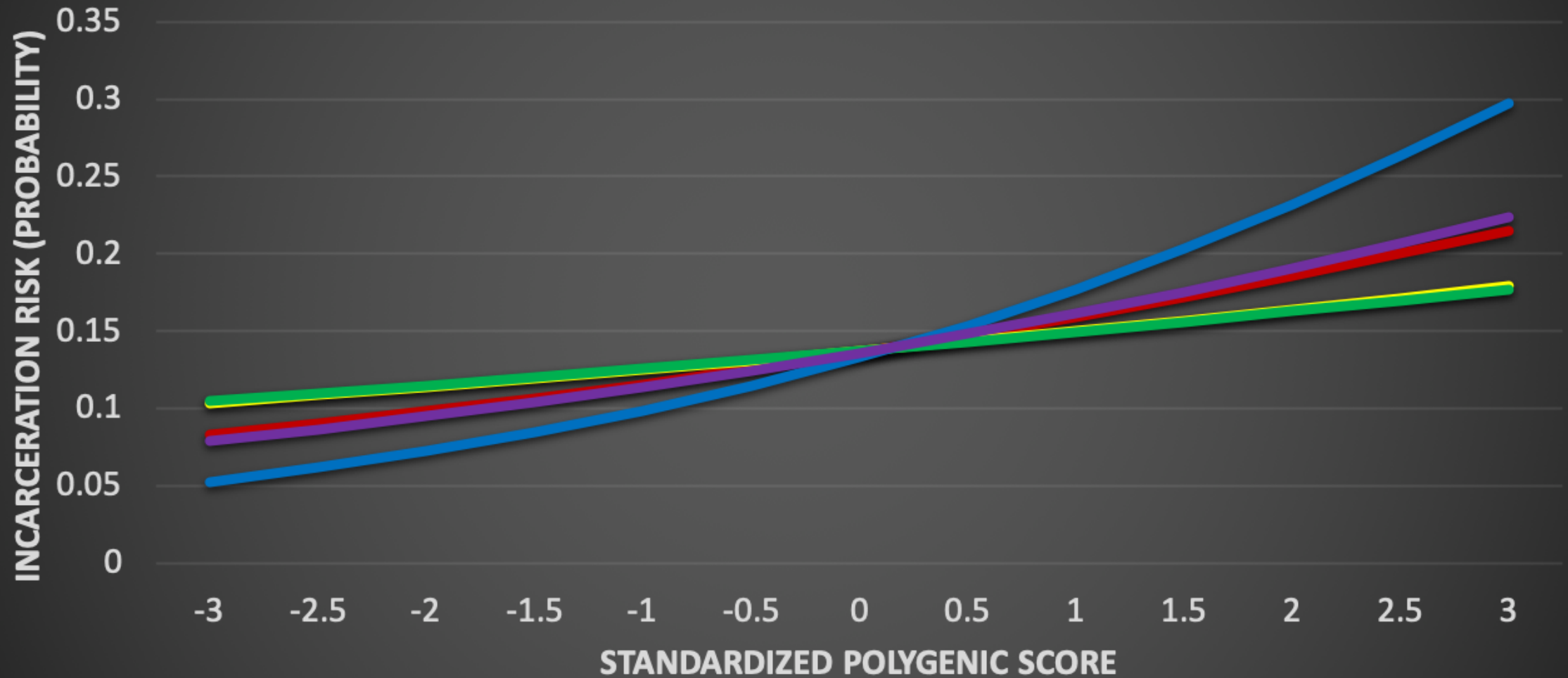
Gene discovery and polygenic prediction from a genome-wide association study of educational attainment in 1.1 million individuals



Data and Measures

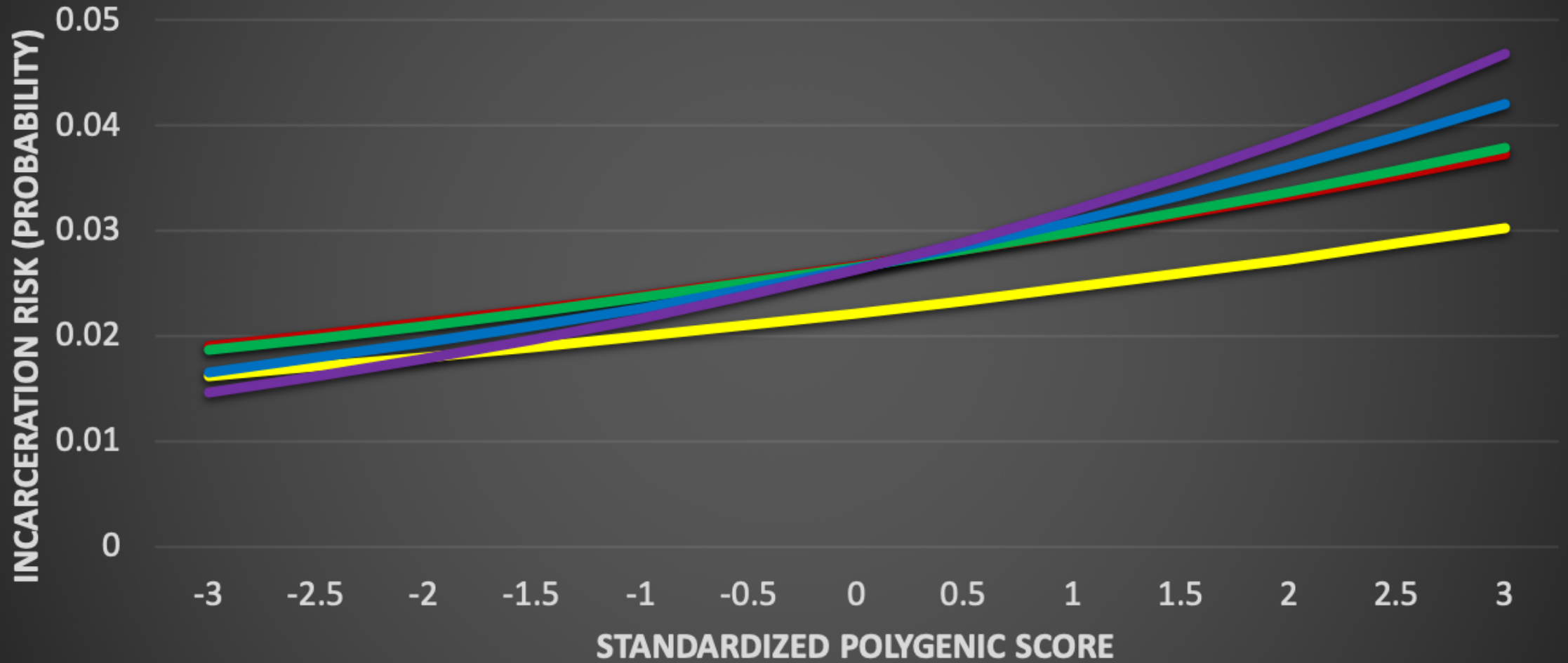
- Data come from Add Health, HRS, and WLS
 - Limited to non-Hispanic whites to minimize confounding effects of population stratification
- *Lifetime Incarceration*
 - “Have you ever been an inmate in a jail, prison, juvenile detention center, or other correctional facility?”
- *Genome-wide Polygenic Scores*
 - ADHD (Demontis et al., 2018)
 - Aggressive Behavior (Pappa et al., 2016)
 - Antisocial Behavior (Tielbeek et al., 2017)
 - (Low) Educational Attainment (Lee et al., 2018)
 - (Early) Age at First Birth (Barban et al., 2016)

Effect of Polygenic Scores on Incarceration Risk in the Add Health



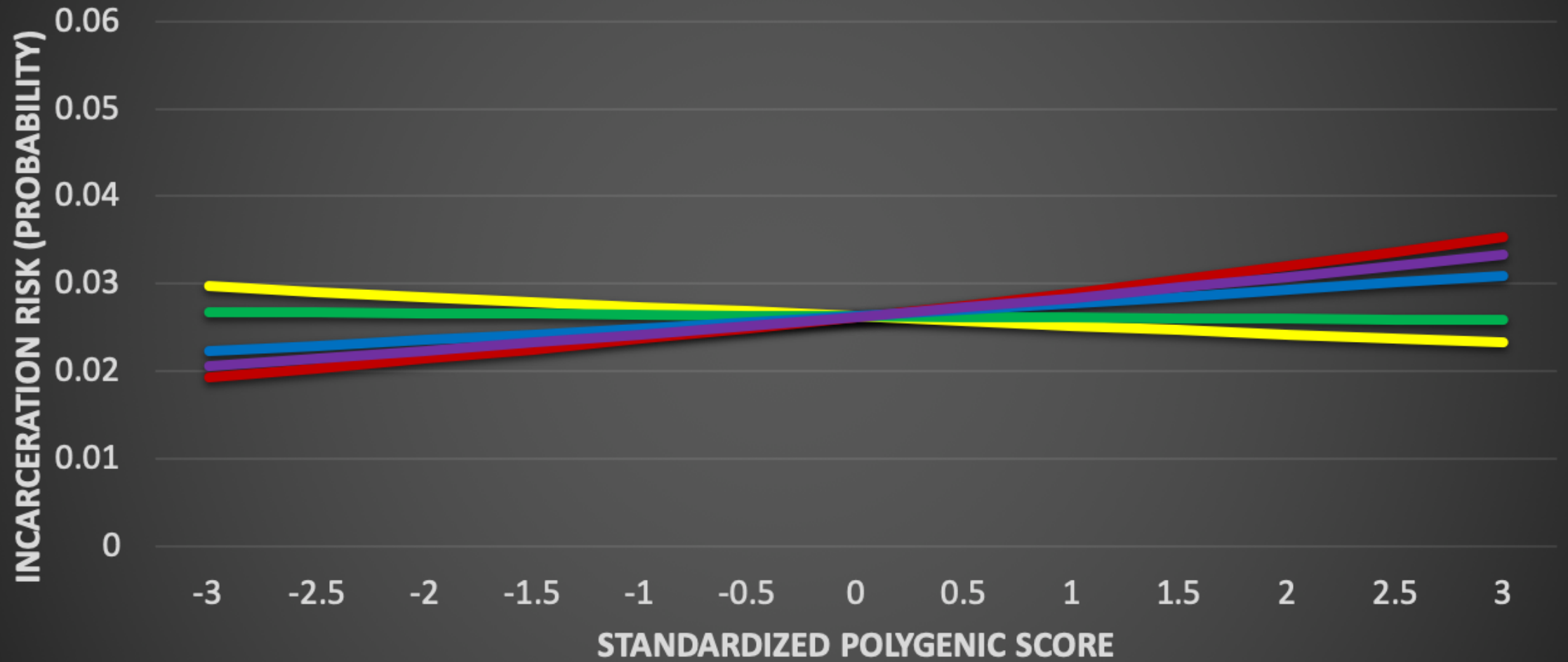
ADHD*** AGG** ASB** LOW EA*** LOW AFB***

Effect of Polygenic Scores on Incarceration Risk in the HRS



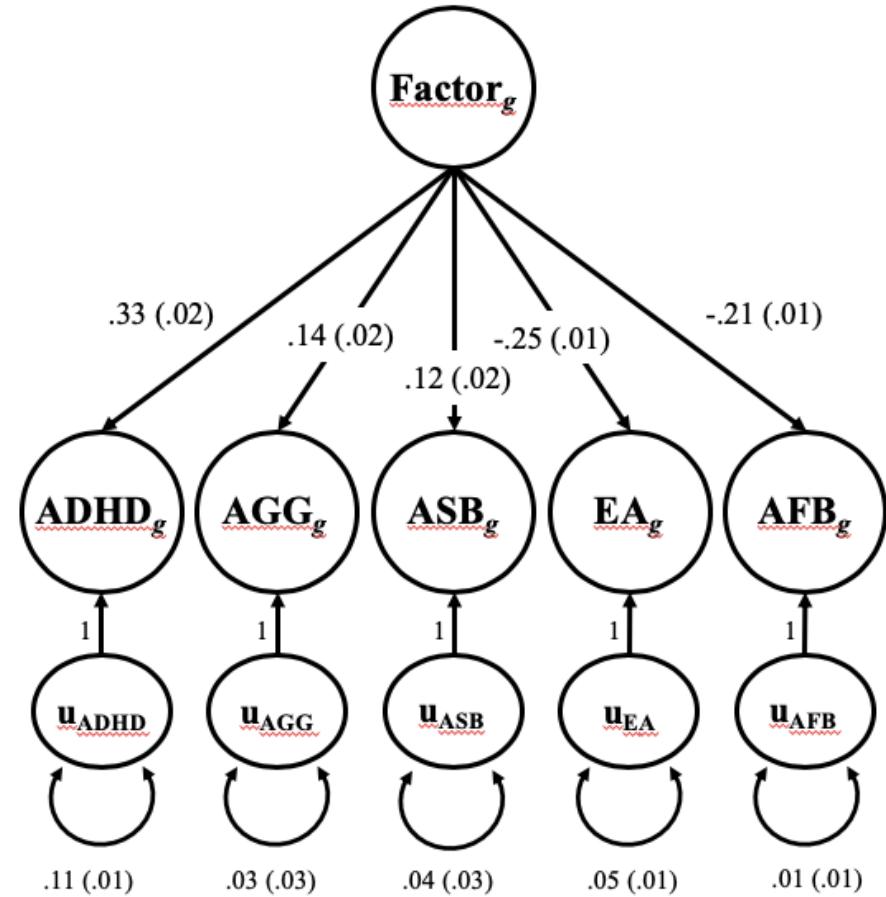
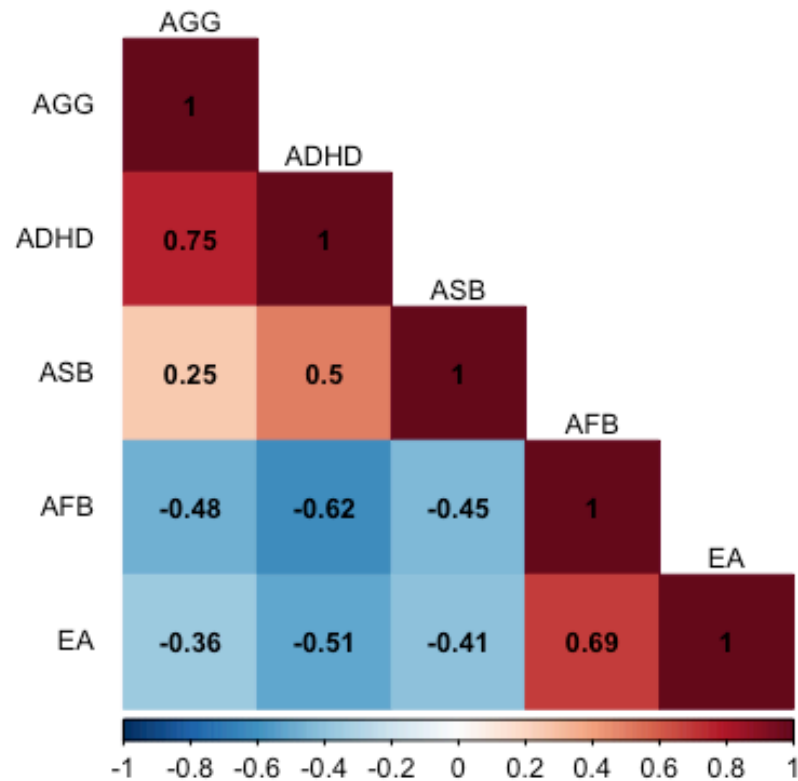
ADHD* AGG† ASB* LOW EA*** LOW AFB***

Effect of Polygenic Scores on Incarceration Risk in the WLS



ADHD+ AGG ASB LOW EA LOW AFB

Future Directions



Broader Considerations

- Polygenic scores are not currently robust enough to serve as a prospective predictor of incarceration
- But this may change as the polygenic scores are refined
- Must consider the ethical and moral questions that will come if it ever becomes possible to use polygenic scores to predict risk of incarceration
- Our stance: genomic screening should not be considered

Acknowledgements

Add Health is a program project directed by Kathleen Mullan Harris and designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill, and funded by grant P01-HD31921 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, with cooperative funding from 23 other federal agencies and foundations. Special acknowledgment is due Ronald R. Rindfuss and Barbara Entwisle for assistance in the original design.

HRS is sponsored by National Institute on Aging Grants NIA U01AG009740, RC2AG036495, and RC4AG039029, and conducted by the University of Michigan.

WLS has been supported principally by the National Institute on Aging (AG-9775, AG-21079, AG-033285, and AG-041868), with additional support from the Vilas Estate Trust, the National Science Foundation, the Spencer Foundation, and the Graduate School of the University of Wisconsin-Madison.