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## BACKGROUND

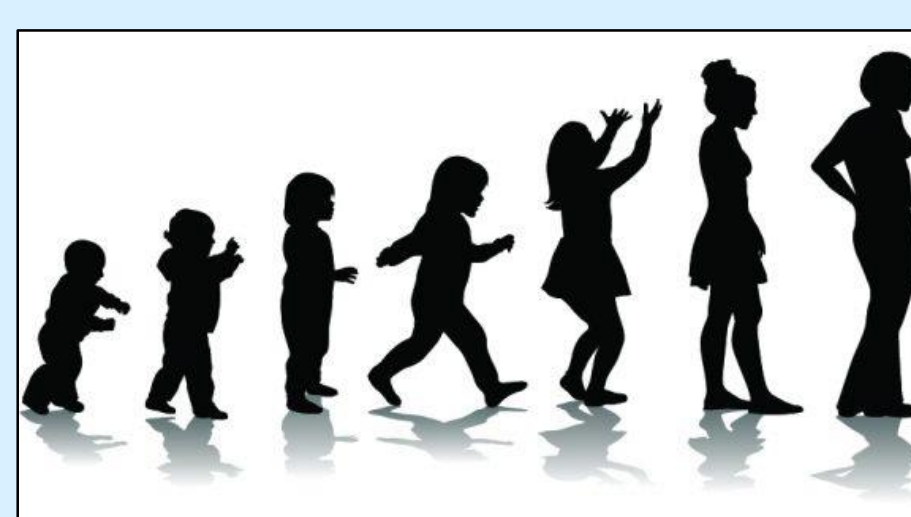
Genome-wide association studies (GWAS) have uncovered genetic associations with age-at-first-birth. Individuals who have children at an early age often exhibit self-regulation difficulties, and behavioral genetic research indicates familial overlap between early reproductive timing and disinhibition. **We tested the hypothesis that a polygenic score for age-at-first-birth would predict disinhibitory risk-taking behavior across the life course.**

We aimed to rule out two alternative explanations for the effects of the polygenic score:  
1. The effects are attributable to family background factors.  
2. The effects are attributable to genetic influences on accelerated maturation.

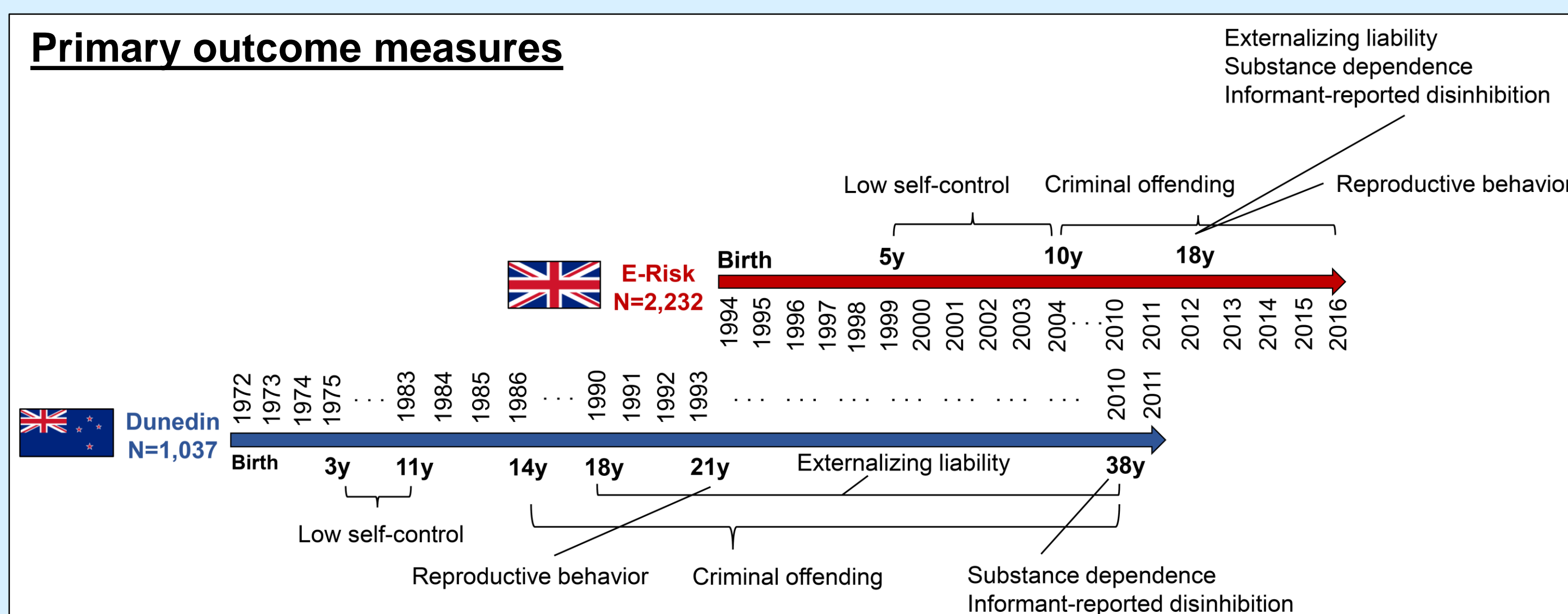
## METHOD

### Participants:

- E-Risk Study:** UK-based cohort followed from birth to age 18 with 93% retention
- Dunedin Study:** New Zealand-based cohort followed from birth to age 38 with 95% retention



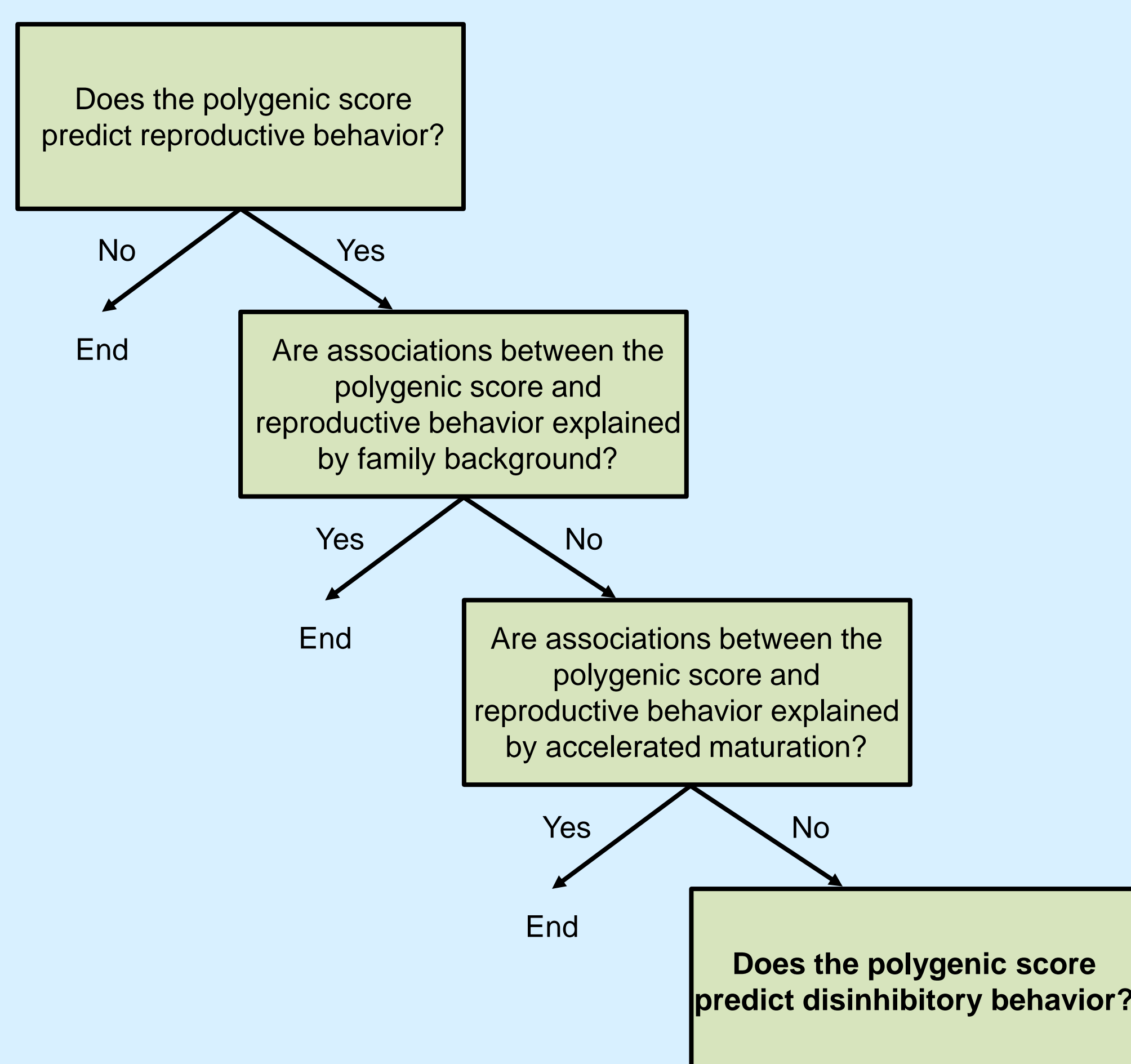
### Primary outcome measures



### Polygenic scores:

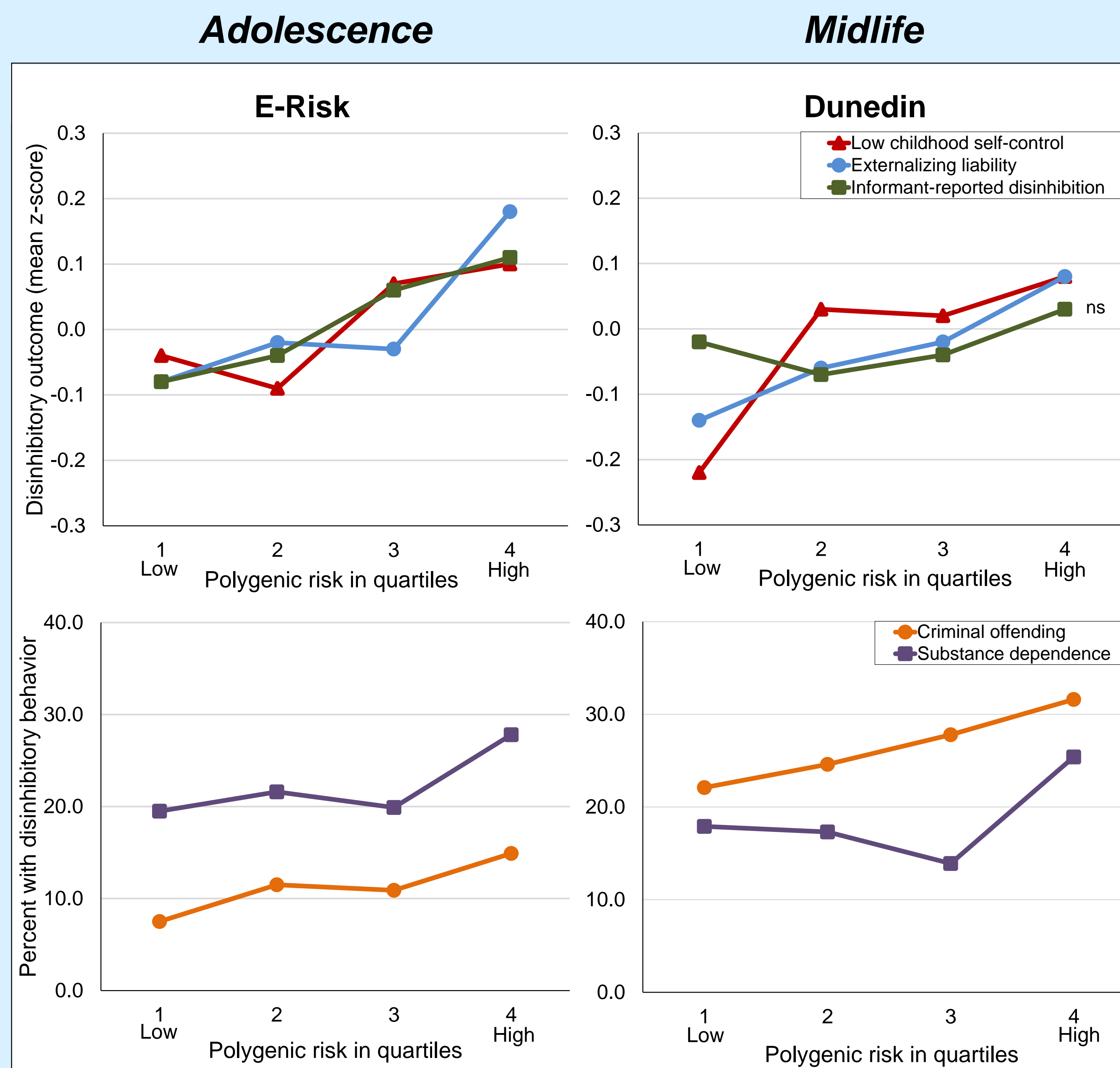
- Computed based on the most recent GWAS (Barban et al., 2016)
- Residualized for the first 10 principal components
- Standardized
- Reverse-coded:** higher scores index greater polygenic risk for early age-at-first-birth

### Conceptual diagram



## PRIMARY RESULTS

**The age-at-first-birth polygenic score predicted individuals' disinhibitory behaviors from childhood into:**



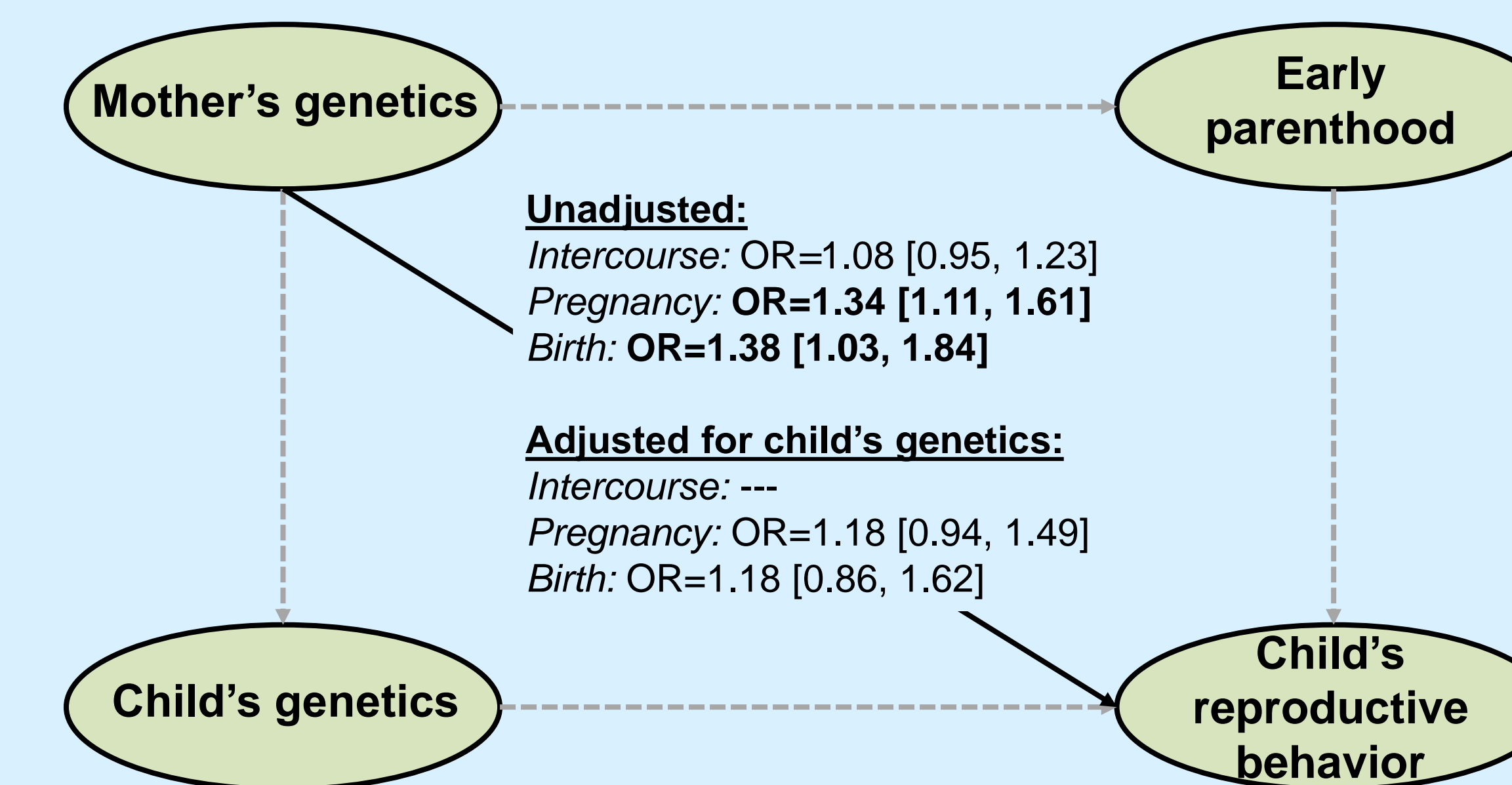
## SECONDARY RESULTS

**Associations between the polygenic score and reproductive behaviors were not fully explained by family background**

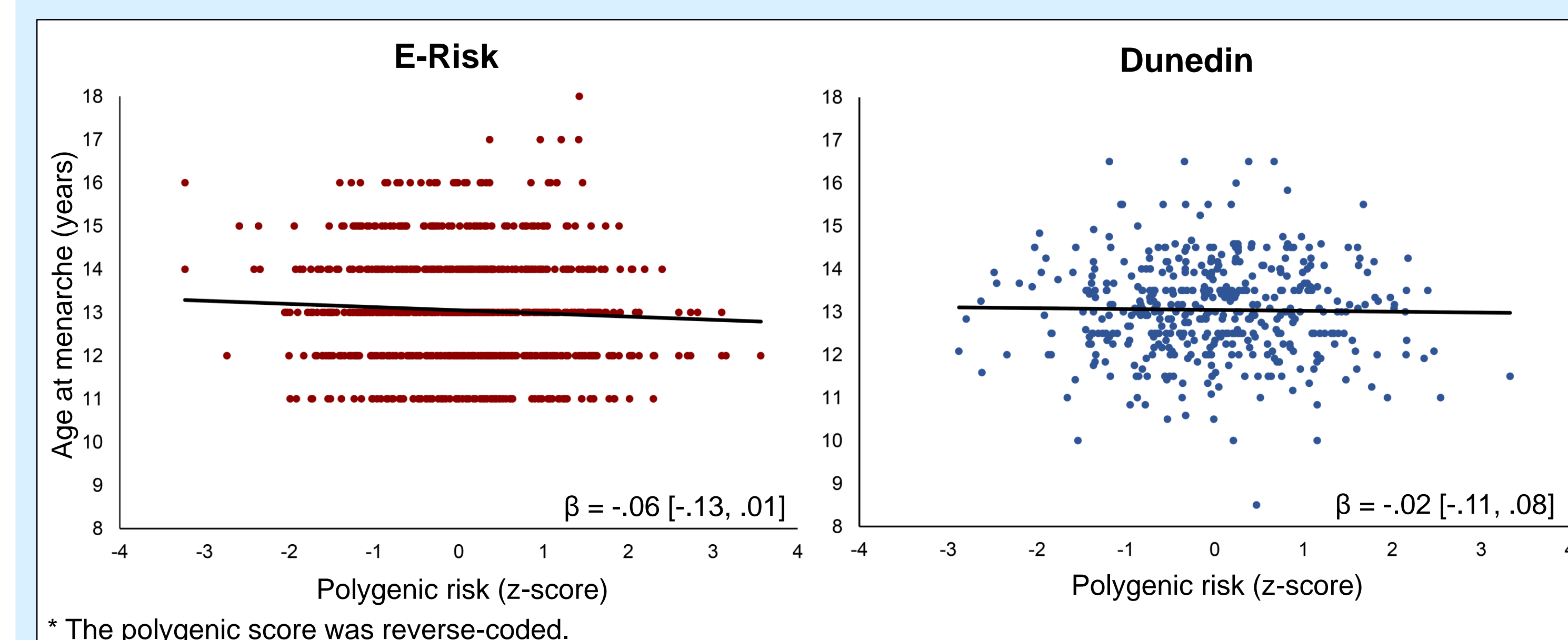
	Unadjusted	Adjusted for childhood SES and maternal age-at-first-birth
<b>Intercourse:</b>		
by age 18	1.32 [1.17, 1.48]	1.22 [1.08, 1.38]
by age 21	1.38 [1.10, 1.72]	1.34 [1.06, 1.69]
<b>Pregnancy:</b>		
by age 18	1.45 [1.21, 1.73]	1.25 [1.04, 1.51]
by age 21	1.29 [1.08, 1.55]	1.20 [1.00, 1.44]
<b>Birth:</b>		
by age 18	1.54 [1.11, 2.14]	1.25 [0.90, 1.74]
by age 21	1.16 [0.90, 1.48]	---

\* The polygenic score was reverse-coded.  
\* Estimates are odds ratios [and 95% confidence intervals].

**Genetic risk for early reproductive behavior was transmitted primarily via direct genetic pathways**

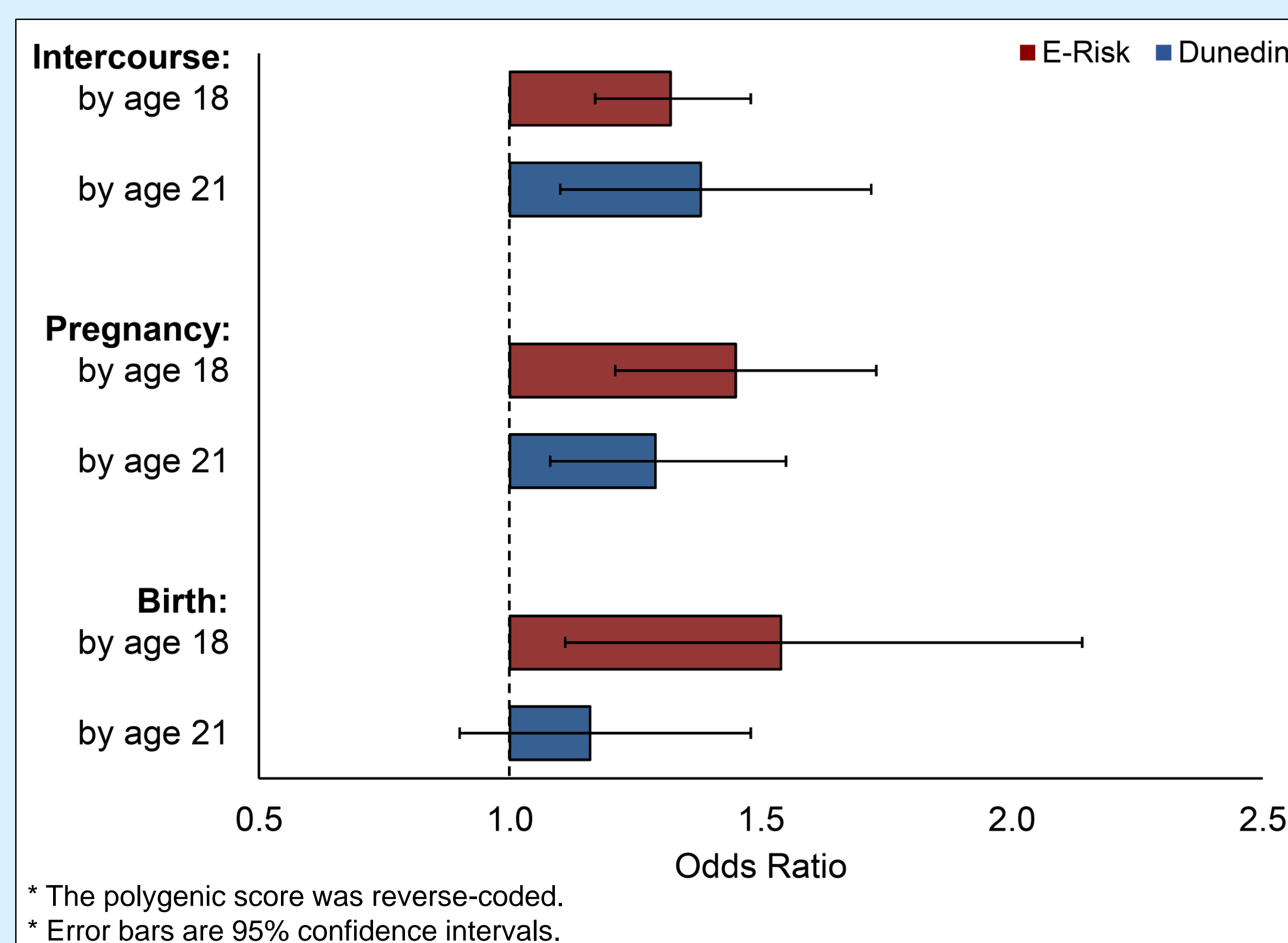


**Associations between the polygenic score and reproductive behaviors were not explained by accelerated maturation**



## SECONDARY RESULTS

**The polygenic score predicted individuals' reproductive behaviors**



## TAKE AWAY

Genetic influences on reproductive behavior also reflect genetic influences on disinhibitory behavior. Age-at-first-birth polygenic scores may be useful tools for researchers interested in self-regulation and life-course outcomes associated with self-regulation. Future GWAS of proxy phenotypes – including age-at-first-birth – may benefit from using target phenotypes of interest to inform sample-selection strategy.