

Maternal Prenatal Alcohol Consumption and Child Cognitive Development

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Abstract

We examine the causal effect of maternal prenatal alcohol consumption on child cognitive development. To account for the endogeneity of maternal alcohol intake, we specify an instrumental variable (IV) approach, exploiting variation in mother's genetic make-up to instrument for her alcohol consumption. In addition to investigating any alcohol vs. no alcohol, we examine effects of the *timing* (first, second and third trimester), *dose* (number of drinks), *pattern* (binge drinking), and *duration* (0-3 trimesters) of consumption.

OLS regressions show a positive correlation between prenatal alcohol intake and children's cognitive performance, with wine consumption showing a particularly strong positive association, but beer consumption being negative. Binge drinking is bad for the child, but a longer exposure to alcohol (in terms of the number of trimesters) improves outcomes.

We then present evidence of a strong social gradient in drinking, with older, higher educated mothers, and those in higher socio-economic groups being more likely to drink in general, and in particular drink wine. Beer on the other hand, is mainly consumed by the lower social classes.

We use a SNP in the Alcohol Dehydrogenase (ADH) family of enzymes, *ADH1B*, which has been robustly shown to affect individual alcohol consumption as an instrument for alcohol intake during pregnancy. We show that the SNP is associated with drinking during pregnancy, with the number of drinks consumed, with binge drinking and with the duration of fetal alcohol exposure. In addition, we show that it is not related to any of the background characteristics that we show to be associated with prenatal drinking.

In stark contrast to the OLS, our IV estimates show strong negative effects of maternal prenatal alcohol consumption on child cognitive development. These effects are very robust to different specifications, and they are not trivial: the educational outcomes of children whose mothers drink during pregnancy are about 2 standard deviations lower compared to children whose mothers do not drink, with each drink – on average – lowering the child's academic outcomes by 0.2-0.3 standard deviations. Each additional trimester of alcohol exposure lowers academic attainment by 0.6 standard deviations, with binge drinking being particularly bad, lowering outcomes by up to three standard deviations.