Genetics and Blackouts

- Baer and colleagues (2003) examined the drinking habits of pregnant women in 1974 and 1975, and then studied alcohol use and related problems in their offspring at seven different time points during the following 21 years. These authors observed that prenatal alcohol exposure was associated with increased rates of experiencing alcohol–related consequences, including blackouts, even after controlling for the offspring's' general drinking habits. (White, 2003)
- A study by Nelson and colleagues (2004) suggests that there might actually be a genetic contribution to the susceptibility to blackouts, indicating that some people simply are built in a way that makes them more vulnerable to alcohol–induced amnesia.

Research Abstracts on Genetics and Blackouts

Genetic Epidemiology of Alcohol-Induced Blackouts.
Nelson, Elliot C., et al.
Archives of General Psychiatry, Vol 61(3), Mar, 2004. pp. 257-263.
Abstract:

Examines the genetic epidemiology of lifetime blackouts and having had 3 or more blackouts in a year, including analyses controlling for the frequency of intoxication. Members of the young adult Australian Twin Register, a volunteer twin panel born between January 1, 1964, and December 31, 1971, were initially registered with the panel as children by their parents between 1980 and 1982. They underwent structured psychiatric telephone interviews from February 1996 through September 2000. The current sample contains 2324 monozygotic and dizygotic twin pairs (mean [SD] age 29.9 [2.5] years) for whom both twins' responses were coded for blackout questions and for frequency of intoxication. Data on lifetime blackouts and having had 3 or more blackouts in a year were collected within an examination of the genetic epidemiology of alcoholism. A lifetime history of blackouts was reported by 39.3% of women and 52.4% of men; 11.4% of women and 20.9% of men reported having had 3 or more blackouts in a year. The finding of a substantial genetic contribution to liability for alcohol-induced blackouts including a component of genetic loading shared with frequency of intoxication may offer important additional avenues to investigate susceptibility to alcohol-related problems.

Alcohol-induced blackouts and maternal family history of problematic alcohol use.
Marino, Elise N., et al.
Addictive Behaviors, Vol 45, Jun, 2015. pp. 201-206.
Abstract:

Background: Consequences of heavy drinking include alcohol-induced blackouts, which are periods of amnesia for all or part of a drinking event. One risk factor for blackouts is family history of problematic alcohol use (FH +); however, research rarely distinguishes maternal from paternal FH +. The objective of this study was to examine whether maternal or paternal FH + better predicts likelihood of experiencing blackouts than a general measure of overall FH +, and whether gender moderates this association. Method: Participants (N = 1164; 65.4% are female) were first-time college freshmen (age range = 17–19) who participated in a 6-year, 10-assessment, longitudinal study in the United States. Alcohol-induced blackouts, the dependent measure, were dichotomized (yes/no) based on endorsement of memory problems after drinking using a single item during Years 4–6. FH +, captured at baseline, was coded if participants self-reported that their mother, father, or any of their four grandparents were a possible or definite problem drinker. Results: Overall,

773 (66.4%) participants reported experiencing blackouts during Years 4–6. Women were more likely to report blackouts than men; however, compared with women with a maternal FH +, men with a maternal FH + were more than twice as likely to report blackouts. Discussion: **Men appear to be more susceptible than women to the effects of a maternal FH +. Genetic and environmental explanations for this finding are discussed.** In sum, these findings are an important step toward understanding a significant yet understudied negative consequence of heavy alcohol use.

Genetic epidemiology of liability for alcohol-induced blacking and passing out.
Davis, Christal N., et al.
Alcoholism: Clinical and Experimental Research, Vol 43(6), Jun, 2019. pp. 1103-1112.
Abstract:

Background: Individuals differ in their sensitivity to alcohol's physiological effects, including blacking and passing out. Blackouts are periods of impaired memory formation when an individual engages in activities they later cannot recall, while passing out results in loss of consciousness. Methods:The sample consisted of 3,292 adult twins from the Australian Twin Registry. Univariate twin analyses were conducted to examine the contributions of genetic and environmental influences to blacking and passing out occurrence and susceptibility (accounting for frequency of intoxication). Evidence for shared etiology of susceptibility to blacking and passing out was examined using bivariate twin analyses. Results: Although blacking and passing out were strongly associated (odds ratio (OR) = 4.45, 95% confidence interval (CI): [3.85, 5.14]), the genetic epidemiology was quite different. Genetic (43%) and nonshared environmental (57%) influences contributed to liability for blackout occurrence. For passing out occurrence, there was evidence of sex differences. Among men, genetic (32%) and nonshared environmental (68%) influences contributed, whereas among women, there were shared (29%) and nonshared environmental (72%) influences. After accounting for frequency of intoxication, genetic influences on blackout susceptibility remained significant; in contrast, only nonshared environmental influences were significant for passing out susceptibility. There was evidence for overlapping genetic and nonshared environmental factors influencing susceptibility to blacking and passing out among men; among women, there were overlapping nonshared environmental influences. Conclusions: Blacking and passing out are 2 common sedative-like effects of heavy drinking, and people differ considerably in their susceptibility to these effects. This study suggests that differences in blackout susceptibility can be explained by genetic factors in both men and women, while differences in susceptibility to pass out after consuming alcohol may be attributable to environmental influences, particularly among women. These environmental factors may include changing social and cultural norms about alcohol use, drinking context, and the type(s) of alcohol consumed.