

Table S1. Characteristics of Sample by Family History of Alcohol Use Disorder

Characteristic	Family Hx Pos (N = 28)		Family Hx Neg (N = 130)	
	Mean	SD	Mean	SD
Age (years)	26.5	5.1	26.1	5.1
Family History Density ^{b,e}	17.6	9.6	0	0.0
Delay Discounting ^{a,c}	-4.6	2.7	-4.5	2.0
Level of Alcohol Response ^d	3.7	1.6	4.4	2.1
AUDIT Score	5.2	2.6	5.6	2.7
	N	%	N	%
Female Sex	11	39.3	62	47.7
Current Alcohol Abuse ^a	0	0.0	4	3.1

^a Missing data for some participants: N = 134 for delay discounting, N = 158 for current alcohol abuse

^b Family History Density is obtained by dividing the number of first and second degree relatives with an Alcohol Use Disorder by the total number of first and second degree relatives. This value is reported as a percentage.

^c Delay discounting is a behavioral measure of impulsivity in which participants choose between smaller immediate or larger delayed rewards. Values are reported as the natural logarithm of the discounting constant, k . Lower values of $\ln(k)$ indicate lower degrees of delay discounting and less impulsivity.

^d Level of Alcohol Response is derived from the Self-Rating of the Effects of alcohol (SRE) form, first five drinking occasions. The final score represents the mean of the number of drinks needed to achieve four possible intoxication-related outcomes, with a higher number indicating a lower level of response to alcohol.

^e Family history positive and negative participants have statistically different distributions for family history density using a Mann-Whitney test ($Z_u = 12.5$, $p < 0.01$)

Table S2. Characteristics of Sample by Delay Discounting

Characteristic	High (N = 67)		Low (N = 67)	
	Mean	SD	Mean	SD
Age (years)	25.9	4.8	25.2	4.1
Family History Density	3.4	8.4	2.7	7.8
Delay Discounting ^{a,b}	-3.2	1.0	-6.0	1.1
Level of Alcohol Response	4.5	2.0	4.2	2.1
AUDIT Score	5.8	2.6	5.7	2.6
	N	%	N	%
Female Sex	32	47.8	30	44.8
Family History Positive	12	17.9	10	14.9
Current Alcohol Abuse ^a	4	6.0	0	0.0

^a Missing data for one participant

^b The mean for delay discounting ($\ln[k]$) was significantly different between low and high delay discounting groups using an Independent Samples t-test ($t(132) = -16.1, p < 0.01$)

Table S3. Characteristics of Sample by Level of Response to Alcohol

Characteristic	High (N = 86)		Low (N = 73)	
	Mean	SD	Mean	SD
Age (years)	26.9	5.6	25.3	4.2
Family History Density ^{a, b}	4.2	8.6	1.8	6.6
Delay Discounting	-4.8	1.7	-4.4	1.8
Level of Alcohol Response ^b	3.0	0.9	5.9	1.8
AUDIT Score	5.0	2.7	6.1	2.5
	N	%	N	%
Female Sex ^c	48	55.8	25	34.2
Family History Positive ^c	21	24.4	7	9.7
Current Alcohol Abuse ^a	1	1.2	3	4.1

^a Missing data for some participants: N = 158 for family history, N = 134 for delay discounting, N = 158 for current alcohol abuse

^b Distributions of level of alcohol response and family history density were significantly different across low and high level of alcohol response groups using Mann-Whitney tests ($Z_u = -10.9$, $p < 0.01$ for alcohol response, $Z_u = 2.5$, $p < 0.05$ for family history density)

^c Sex and family history of Alcohol Use Disorder status were significantly associated with level of response to alcohol using Pearson's Chi-Squared tests ($X^2(1) = 7.4$, $p < 0.01$ for sex and $X^2(1) = 5.8$, $p < 0.05$ for family history)

Table S4. Spearman's Rho Correlations Between Primary Independent Variables

	Sex	Family History Density	DD ^(a)	Alcohol Response	Age	AUDIT
Sex (N=159)						
Family History Density (N=158)	0.06					
Delay discounting (N=134)	-0.06	0.01				
Alcohol Response (N=159)	0.29**	-0.14	0.13			
Age (N=159)	0.06	0.08	0.06	-0.19*		
AUDIT score (N=159)	0.16	-0.04	0.04	0.27**	-0.26**	
AUDIT-C ^b (N=153)	0.16*	-0.10	-0.05	0.23**	-0.20*	0.84**

^a Delay discounting ($\ln[k]$)

^b AUDIT-C is a consumption (hazardous alcohol use) subscale derived from questions 1–3 of the AUDIT

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

Table S5. Characteristics of Sample by Alcohol Use Disorder Risk Factor Group

Characteristic	0 Risk Factors (N = 25)		1 Risk Factor (N = 65)		2 Risk Factors (N = 36)		3 Risk Factors (N = 8)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age (years)	25.0	4.6	25.4	4.2	26.0	5.0	26.3	4.2
Family History Density ^a	0.0	0.0	1.5	5.7	4.1	9.2	20.8	10.3
Delay Discounting ^a	-5.8	0.8	-4.8	1.9	-3.7	1.4	-3.2	1.0
Alcohol Response ^a	3.5	1.5	4.4	2.3	4.9	2.0	4.1	1.5
AUDIT Score	5.2	2.2	5.9	3.0	5.7	2.3	6.4	2.2
	N	%	N	%	N	%	N	%
Female Sex ^b	25	100.0	33	50.8	4	11.1	0	0.0
Current Alcohol Abuse ^c	0	0.0	2	3.1	2	5.7	0	0.0

^a Distributions of Family History Density, Delay Discounting, and Alcohol Response are different across Alcohol Use Disorder risk factor groups using Kruskal-Wallis tests as the omnibus test ($p < 0.05$ for all tests). Bonferroni corrected pairwise comparisons: Family history density - significant between the 3 risk factor group and the 0, 1 and 2 risk factor groups ($p < 0.05$ for all tests); Delay discounting – significant for all tests ($p < 0.05$) except for the comparison between 2 and 3 risk factor group; Alcohol response – only significant between 0 and 2 risk factor groups ($p < 0.05$).

^b Female sex was significantly associated with Alcohol Use Disorder risk factor group using a Pearson's Chi-Squared test ($\chi^2(3) = 54.4, p < 0.01$).

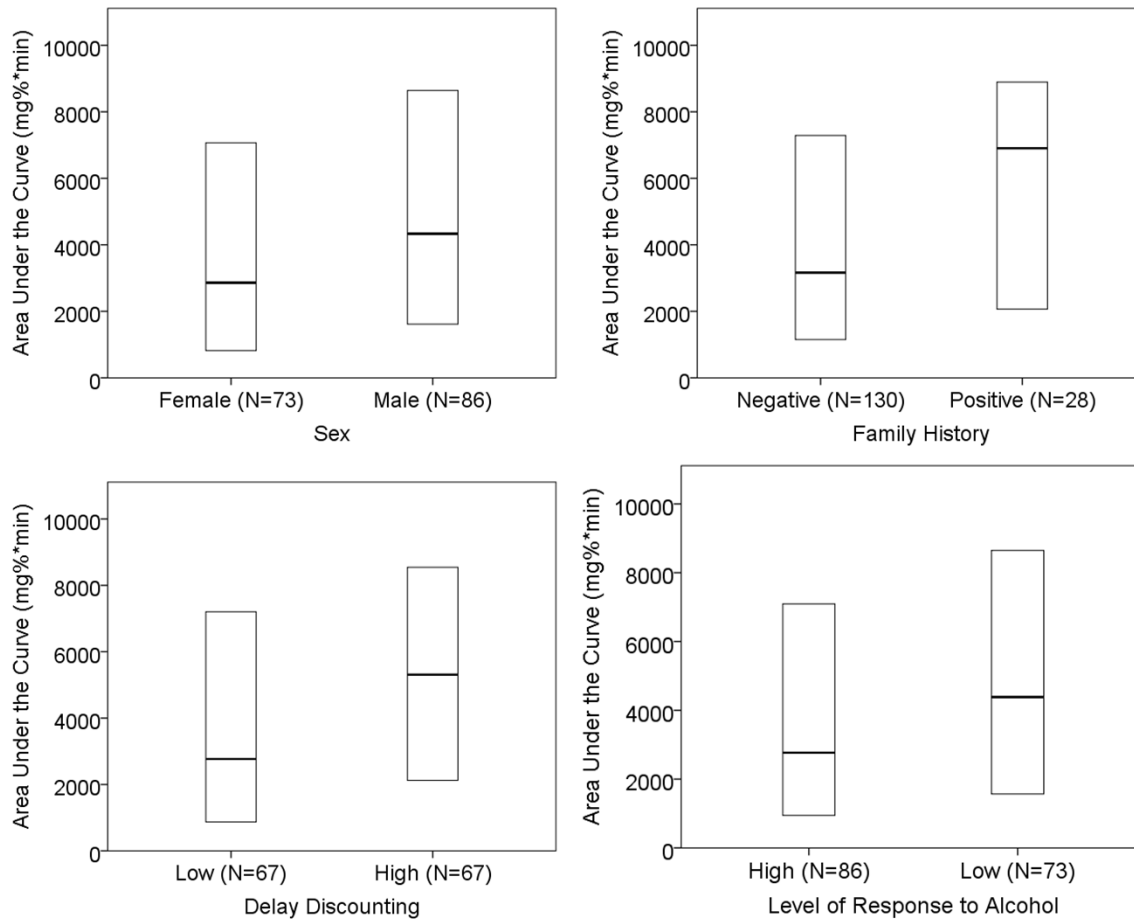
^c Missing data for one participant

Table S6. Hazard Ratios from Cox Proportional Hazards Models Examining the Effect of Alcohol Use Disorder Risk Factor Group on Rate of Binging^a

	Model 1		Model 2	
	Hazard Ratio	95% CI	Hazard Ratio	95% CI
0 Risk Factors	[Reference]		[Reference]	
1 Risk Factor	1.32	0.56, 3.11	1.17	0.49, 2.79
2 Risk Factors	2.60	1.08, 6.26	2.64	1.07, 6.51
3 Risk Factors	5.40	1.86, 15.66	4.84	1.65, 14.16
Age	0.91	0.84, 0.99	0.92	0.85, 0.99
Level of Alcohol Response	—	—	1.01	0.88, 1.15
AUDIT Score	—	—	1.16	1.05, 1.28

^a Model 1 examines alcohol use disorder risk factor group and age, with participants divided into four groups based on their number of alcohol use disorder risk factors: 0, 1, 2, or 3 risk factors. Model 2 also accounts for level of alcohol response and AUDIT to control for their effects. For both models, the 0 risk factor group is the reference group for alcohol use disorder risk factor group.

Figure S1. Total Exposure to Alcohol by Alcohol Use Disorder Risk Factor^a



^a The area under the curve of the breath alcohol concentration by time plot (total alcohol exposure) was examined by each Alcohol Use Disorder risk factor. Males, family history positive individuals, and high delay discounters had significantly higher exposures than females, family history negative individuals, and low delay discounters respectively (sex $U(86, 73) = 3763$, $p = 0.031$; family history $U(28, 130) = 2247$, $p = 0.052$; delay discounting $U(67, 67) = 2839$, $p = 0.008$). High and low alcohol responders did not differ significantly in their exposure ($U(73, 86) = 2619$, $p = 0.072$). The horizontal line in the middle of each box indicates the median, while the bottom and top borders of the box represent the 25th and 75th percentile values, respectively.