**Figure Legends**

Main Figure 1: Alcohol changes the shape of psychometric function.

3 decision making tasks: Describe them in short

Experimental timeline: how they are organized

Example of individual psychometric function

How did you fit, describe parameters

Distributions of param and statistics.

Median psychometric function is affected. Two middle conc. Only.

Provide stat

Variability affected

Main Figure 2: Males are affected more than females

Main Figure 3: Describe time in feeder and describe conclusions with stat

Main Figure 4: Individual differences.

Main Figure 5: Long term effects of alcohol on CCB task but not on NCCB.

Main Figure 6: Long-term effects are not gender dependent. Discuss time in feeder.

Main Figure 7: Check individual differences in long-term alcohol.

Fig 1: **Alcohol alters psychometric functions**  
a) Illustration of non-conflict decision making task. In each trial, the bowl where the reward will be dispensed is indicated by illuminated LEDs around it. The reward levels are represented by varying concentrations (0.5%, 2%, 5%, 9%) of sucrose solution. The metadata of 3 non-conflict tasks are summarized. LED intensity is fixed at 15 lux in this behavioral protocol. In each trial the illuminated bowl is randomly determined.

b) Conflict decision making task, and the corresponding metadata are summarized. In this behavioral protocol, LED intensity varies from 15-320 lux.

c) Acute alcohol task and corresponding metadata is summarized. Instead of varied sucrose solution different concentrations of alcohol act as offer.   
  
d, i, j) Psychometric plots of approach rates for individual sessions of all rats (N=20) across different reward levels in a non-conflict cost-benefit (NCCB), conflict cost-benefit (CCB), and acute alcohol (AA) tasks, respectively. The total number of sessions across all animals is 115, 125, and 158 for NCCB, CCB, and AA tasks, respectively.

e) Psychometric plot for one specific session of the NCCB task, represented by 4 data points corresponding to different reward levels. The data is fitted with a 4-parameter logistic model (f(x) = d + (a-d)/ (1 + (x/c) ^b)). Both the raw data points and the fitted curve are displayed. The derived parameters (a, b, c, d) and the R² value of the fit are indicated on the figure.

f) The kernel probability density plots of the fitting parameter c (inflection point) show significant difference between NCCB and AA tasks (KS test, p = 0.0320), and CCB and AA tasks (KS test, p = 0.0000), respectively. The difference in probability density of c is more pronounced between CCB and AA tasks than between NCCB and AA tasks.

g) The difference in approach rates is more pronounced between CCB and AA tasks (MANOVA, p = 3.9096e-07) than between NCCB and AA tasks (MANOVA, p = 0.0010).

h) Variances in approach rates at four different concentrations of sucrose solutions shows significant difference between both NCCB and AA tasks (F-test, p = 0.0096), and CCB and AA tasks (F-test, p = 0.0001). Error bars are shown with lower and upper confidence intervals with 95% significance.

Fig 2: **Sex dependent effects of alcohol**  
a) Approach rates for individual sessions for all rats (N=10) in NCCB task, separated by gender. The total number of sessions across males and females are 54 and 61, respectively.

b) Approach rates for individual sessions for all rats (N=10) in AA task, separated by gender. The total number of sessions across males and females are 77 and 81, respectively.

c) The kernel probability density of inflection point has significantly shifted to left for AA tasks in males (KS test, p = 0.0010) but not in females (KS test, p = 0.9860) when compared to NCCB tasks.

d) The difference in approach rates is statistically significant between NCCB and acute alcohol tasks for males (MANOVA, p = 3.3390e-05) but not for females (MANOVA, p = 0.4701).

e) Variances in approach rates at four different concentrations of sucrose solutions shows no significant difference between NCCB and acute alcohol tasks for both males (F-test, p = 0.1209) and females (F-test, p = 0.0530).

f) Gender-specific approach rates of individual sessions for all rats (N = 10) in CCB. The total number of sessions across males and females are 63 and 62, respectively.

g) The kernel probability density of inflection point is significantly shifted to left AA tasks compared to CCB task in males (KS test, p = 0.0000) but not in females (KS test, p = 0.1580).

h) The difference in approach rates is more pronounced between males (MANOVA, p = 1.1419e-07) than females (0.0134) in CCB vs AA tasks.

i) Variances in approach rates at four different concentrations of sucrose solutions shows significant difference between NCCB and AA tasks for males (F-test, p = 0.0000), but not for females (F-test, p = 0.0603).

Fig 3: **Alcohol alters time spent in reward zones**  
a) Two sample plots showing the time in reward zone for individual trials.

b) The difference in time in reward zone across four different concentration of sucrose solution is statistically significant between both NCCB and AA tasks (MANOVA, p = 0.0002), and CCB and AA tasks (MANOVA, p = 0.0000).

c) The kernel probability density plots of inflection point are significantly different between both NCCB and AA (KS test, p = 0.0030) and CCB and AA tasks (KS test, p = 0.0040).

d) The difference in time in reward zone is statistically significant between NCCB and AA tasks for males (MANOVA, p = 0.0000) but not for females (MANOVA, p = 0.5719).

e) The kernel probability density is significantly different between NCCB and AA tasks for males (KS test, p = 0.0050), but not for females (KS test, p = 0.1700).

f) The difference in time in reward zone is statistically significant between CCB and AA tasks for males (MANOVA, p = 0.0000) but not for females (MANOVA, p = 0.2946).

g) The kernel probability density is significantly different between CCB and AA tasks for males (KS test, p = 0.0090), but not for females (KS test, p = 0.1840).

Fig 4: **Identification of vulnerability**  
a) Psychometric profiles of a particular animal during NCCB, CCB, and AA tasks, showing vulnerability with respect to the AA task.

b) Psychometric profiles of a particular animal during NCCB, CCB, and AA tasks, showing resistance with respect to the AA task.

c) Two plots showing the fraction of sigmoid across all sessions of the AA task for males (n = 10) and females (n = 10), respectively. Each plot contains grouped bars representing the fraction of sigmoid for individual. A dashed line at y = 0.7 indicates the threshold value, which was used to determine if an animal follows a sigmoid psychometric curve.

d) Pie charts showing the number of animals with sigmoidal and non-sigmoidal psychometric profiles for both genders. The difference in the number of animals is statistically significant (chi-square test, p = 0.0246).

Fig 5: **Alcohol effects proxy cost benefit tasks**  
a) Psychometric plots of approach rates for individual sessions of all rats (N=20) in proximal non-conflict (PNC), and proximal conflict (PC) tasks.

b) Psychometric plots of approach rates for individual sessions of all rats (N=20) in conflict non-conflict post-alcohol (NCPA), and post-alcohol (CPA) tasks.

c) A shift in inflection point is observed only in the PC task, indicating a significant change in behavior compared to the other tasks.

d) The difference in approach rates between cost-benefit and proxy alcohol is more pronounced in conflict task (NCCB vs PNC: MANOVA, p = 0.0023, CCB vs PC: MANOVA, p = 1.7170e-07). The post-alcohol conditions indicate a normalization of approach rates compared to the proxy alcohol conditions (NCCB vs NCPA: MANOVA, p = 0.0459, CCB vs CPA: MANOVA, p = 0.0413).

e) Variances in approach rates shows greater change in conflict tasks (CCB vs PC: F-test, p = 0.0000; CCB vs CPA: F-test, p = 0.0000) than in non-conflict tasks (NCCB vs PNC: F-test, p = 0.0015; NCCB vs NCPA: F-test, p = 0.3755).

Fig 6: **Sex dependent effects of alcohol on proxy tasks**  
a) Approach rates for individual sessions for all rats (male = 10, female = 10) in PNC task separated by gender. The total number of sessions across males and females are 51 and 64, respectively.

b) Approach rates for individual sessions for all rats (male = 10, female = 10) in NCPA task, separated by gender. The total number of sessions across males and females are 30 and 30, respectively.

c) The kernel probability densities of the inflection point for both the PNC and NCPA tasks show no significant changes compared to the NCCB task across both genders. In males, the comparisons were as follows: NCCB vs. PNC (KS test, p = 0.2420), and NCCB vs. NCPA (KS test, p = 0.1870). In females: NCCB vs. PNC (KS test, p = 0.5630), and NCCB vs. NCPA (KS test, p = 0.6610).

d) The difference in approach rates is statistically significant between NCCB and PNC tasks (MANOVA, p = 2.0177e-04), but not between NCCB and NCPA tasks in males (MANOVA, p = 0.1898). In females, the difference approach rates are not significant for both NCCB vs PNC (MANOVA, p = 0.1498) and NCCB vs PNC (MANOVA, p = 0.1761).

e) Variances in approach rates at four different concentrations of sucrose solutions shows significant difference between NCCB and PNC tasks in both males (F-test, p = 0.0149) and females (F-test, p = 0.0153). However, it shows no difference between NCCB and NCPA tasks in both males (F-test, p = 0.4042) and females (F-test, p = 0.2274).

f) Approach rates for individual sessions for all rats (male = 10, female = 10) in PC task separated by gender. The total number of sessions across males and females are 30 and 26, respectively.

g) Approach rates for individual sessions for all rats (male = 10, female = 10) in CPA task separated by gender. The total number of sessions across males and females are 34 and 17, respectively.

h) The kernel probability densities of the inflection point for PC tasks show significant changes compared to the CCB task across both genders (In males, CCB vs. PC: KS test, p = 0.0020; in females, CCB vs. PC: KS test, p = 0.0200). But no change was observed for CPA task compared to CCB task across both genders (In males, CCB vs. CPA: KS test, p = 0.0570; in females, CCB vs. CPA: KS test, p = 0.0840).

i) The difference in approach rates is statistically significant between CCB and PC tasks across both genders (In males: MANOVA, p = 4.5992e-08; in females: MANOVA, p = 0.0046). The difference in approach rates between CCB and CPA tasks are significant in males (MANOVA, p = 6.5198e-04) but not in females (MANOVA, p = 0.1007).

j) Variances in approach rates in males shows significant difference in both tasks with respect to CCB task (CCB vs CP: F-test, p = 0.0000, CCB vs CPA: F-test, p = 0.0000). However, it shows no difference in females (CCB vs CP: F-test, p = 0.3236, CCB vs CPA: F-test, p = 0.9659).

Fig 7: **Identification of vulnerability in proxy tasks**  
a) Two plots showing the fraction of sigmoid across all sessions in PNC task for males (n = 10) and females (n = 10), respectively. Each plot contains grouped bars representing the fraction of sigmoid for individual. A dashed line at y = 0.7 indicates the threshold value, which was used to determine if an animal follows a sigmoid psychometric curve.

b) Pie charts showing the number of animals with sigmoidal and non-sigmoidal psychometric profiles for both genders. The difference in the number of animals is statistically significant (chi-square test, p = 0.0098).

c) Two plots showing the fraction of sigmoid across all sessions in PC task for males (n = 10) and females (n = 10), respectively.

d) Pie charts showing the number of animals with sigmoidal and non-sigmoidal psychometric profiles for both genders. The difference in the number of animals is not significant (chi-square test, p = 0.1596).

Supp Fig 1: **Psychometric functions altered following alcohol**  
a) Overall difference in approach rates is significant between NCCB and AA tasks (MANOVA, p = 0.0010). Gender specific difference in approach rates is significant only in males (In males, MANOVA, p = 3.3390e-05; in females, MANOVA, p = 0.4701).

b) Overall difference in approach rates is significant between CCB and AA tasks (MANOVA, p = 3.9096e-07). Gender specific difference in approach rates is stronger in males (In males, MANOVA, p = 1.1419-07; in females, MANOVA, p = 0.0134).

Supp Fig 2: **Vulnerability versus resilience in individuals following alcohol**  
a) Psychometric profiles of 3 animals in NCCB, CCB, and AA tasks, across both genders.

b) Two plots showing the fraction of sigmoid across all sessions of the NCCB task for males (n = 10) and females (n = 10), respectively.

c) Pie charts showing the number of animals with sigmoidal and non-sigmoidal psychometric profiles for both genders. The difference in the number of animals is not significant (chi-square test, p = 0.2636).

d) Two plots showing the fraction of sigmoid across all sessions of the CCB task for males (n = 10) and females (n = 10), respectively.

e) The difference in the number of animals having sigmoidal and non-sigmoidal psychometric profiles for both genders are not significant (chi-square test, p = 0.2636).

Supp Fig 3: **Alcohol affects time and individual differences in non-alcohol related decision-making**  
a) The difference in time in reward zone is statistically significant between NCCB and PNC tasks (MANOVA, p = 0.0209), but not between NCCB and NCPA tasks in males (MANOVA, p = 0.6699). In conflict task, both PC and CPA tasks are significantly different than CCB task (CCB vs PC: MANOVA, p = 0.0001; CCB vs CPA: MANOVA, p = 0. 0001).

b) The kernel probability densities of the inflection point show stronger difference in NCCB vs PNC tasks (KS test, p = 0.0000) than in NCCB vs NCPA tasks (KS test, p = 0.0350). In conflict task, the kernel probability densities show significant difference only between CCB vs PC tasks (CCB vs PC: KS test, p = 0.0000; CCB vs CPA: KS test, p = 0.1800).

c) Only males show significant difference in PNC and NCPA tasks compared to NCCB task (In males, NCCB vs PNC: MANOVA, p = 0.0021, NCCB vs NCPA: MANOVA, p = 0.0474; in females, NCCB vs PNC: MANOVA, p = 0.9198, NCCB vs NCPA: MANOVA, p = 0.8272).

d) The kernel probability densities of the inflection point show statistical difference in males for NCCB vs PNC tasks (KS test, p = 0.0030), but not in NCCB vs NCPA tasks (KS test, p = 0.1900). In females, no difference was observed in PNC and NCPA tasks compared to NCCB task (NCCB vs PNC: KS test, p = 0.0600; NCCB vs NCPA: KS test, p = 0.1550).

e) Only males show significant difference in PC and CPA tasks in terms of time in reward zone compared to CCB task (In males, CCB vs PC: MANOVA, p = 0.0000, CCB vs CPA: MANOVA, p = 0.0000; in females, CCB vs PC: MANOVA, p = 0.3020, CCB vs CPA: MANOVA, p = 0.7267).

f) Only males show significant difference in PC and CPA tasks in terms of kernel probability densities compared to CCB task (In males, CCB vs PC: KS test, p = 0.0000, CCB vs CPA: KS test, p = 0.0310; in females, CCB vs PC: KS test, p = 0.2120, CCB vs CPA: KS test, p = 0.8660).

g) Two plots showing the fraction of sigmoid across all sessions of the NCPA task for males (n = 10) and females (n = 10), respectively.

h) Pie charts showing the number of animals with sigmoidal and non-sigmoidal psychometric profiles for both genders. The difference in the number of animals is not significant (chi-square test, p = 1.0000).

i) Two plots showing the fraction of sigmoid across all sessions of the CPA task for males (n = 10) and females (n = 10), respectively.

j) The difference in the number of animals having sigmoidal and non-sigmoidal psychometric profiles for both genders are not significant (chi-square test, p = 1.0000).