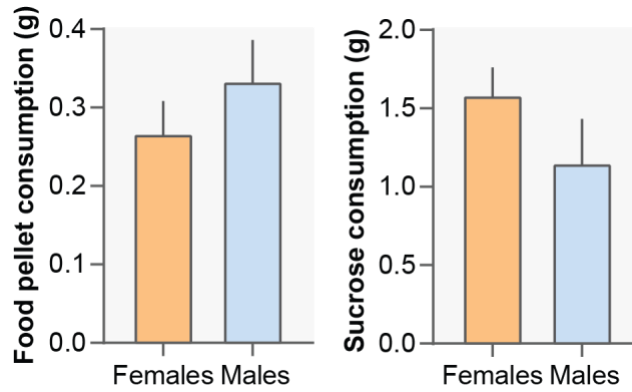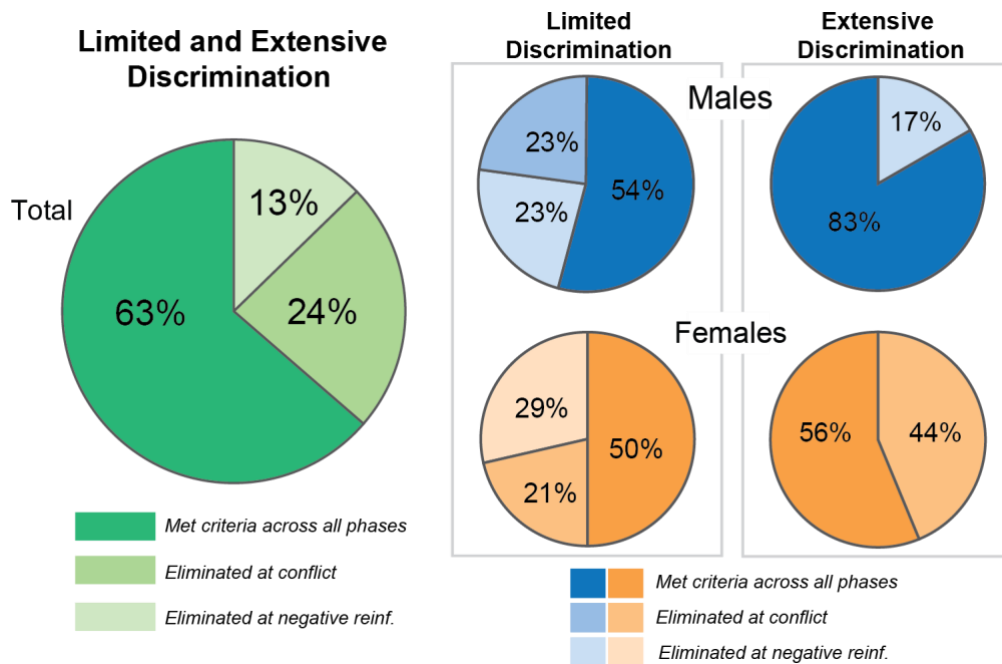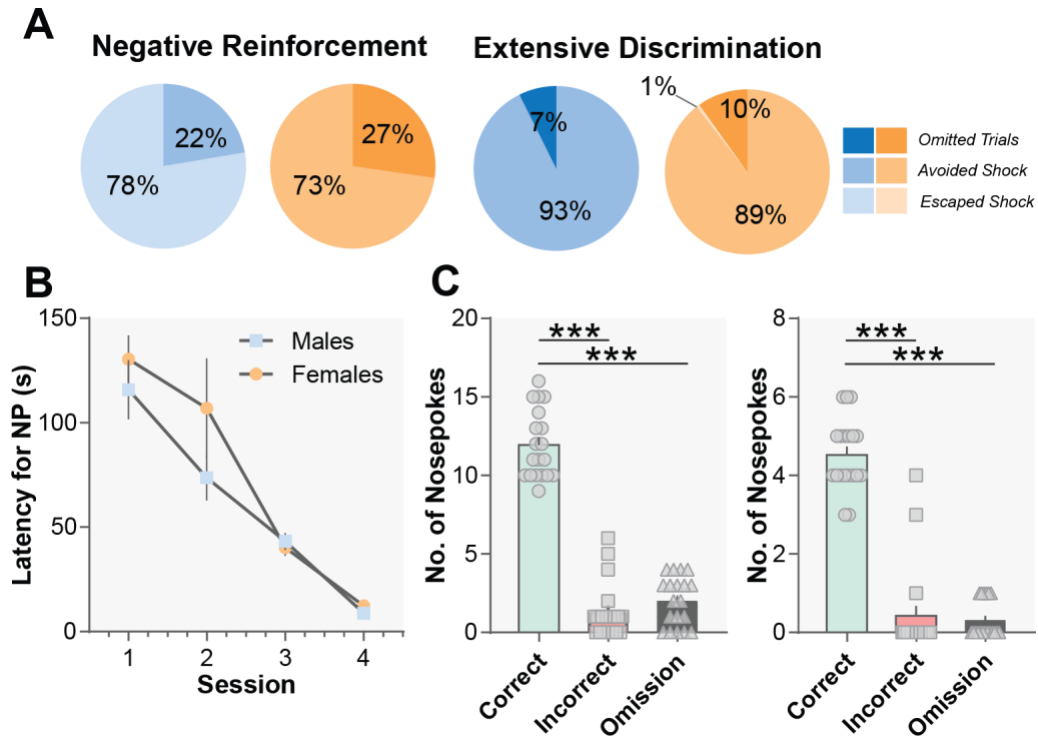**Supplementary Figure 1.** Weights of males and females in limited discrimination group were taken at the beginning of the experiment. Males weigh more than females ($t(41)$= 9.786, p<0.0001). Data represented as mean ± S.E.M. *** p<0.0001.
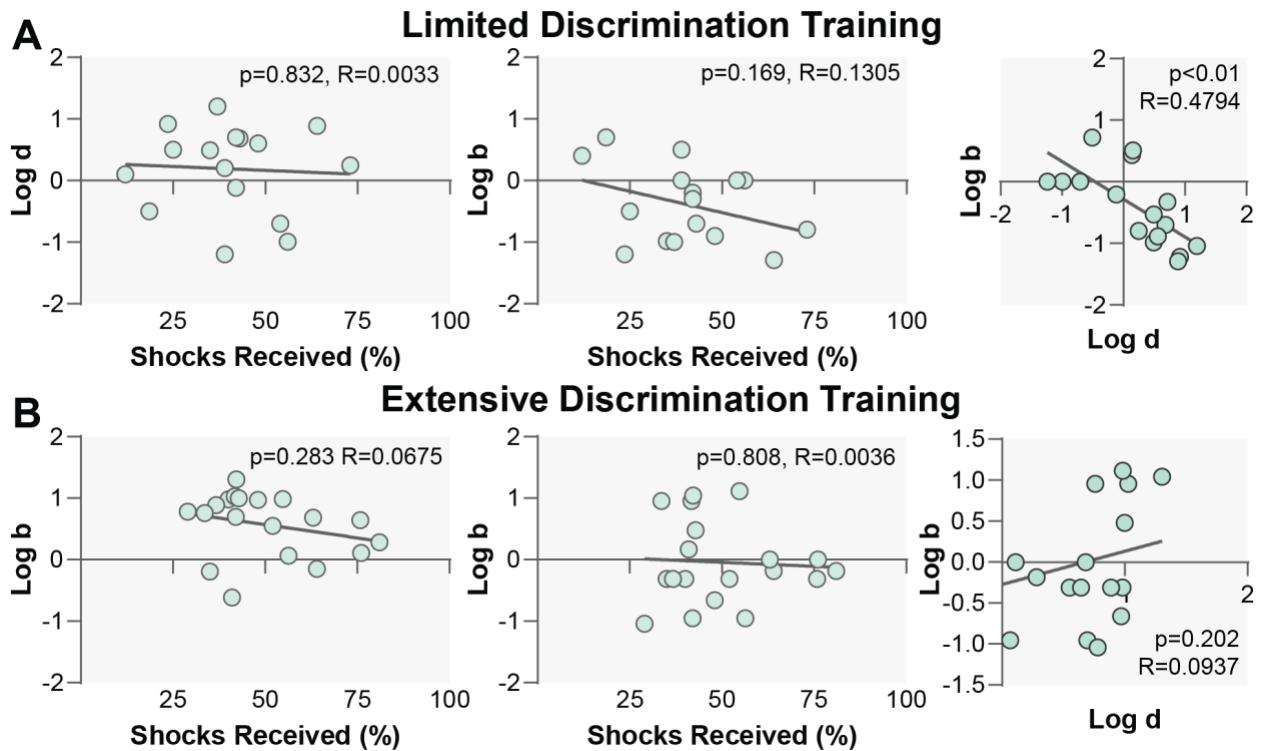
Supplementary Figure 2. Following a 24 hr food restriction period, mice (n=12) were given free access to regular chow (5g) then 10% sucrose (5g) in their home cages for 1 hr for each. At the end of the 1 hr period the food pellets and sucrose are weighed again to calculate total consumption. Food pellet consumption ($t(22)= 0.9944$, $p>0.05$) and sucrose consumption ($t(20)= 1.343$, $p>0.05$) was not significantly different between males and females. Data represented as mean ± S.E.M.

Supplementary Figure 3. Total mice that were eliminated from the study during negative reinforcement, during conflict, and remaining that met criteria across all phases limited and extensive discrimination combined. 54% of males and 50% females completed all phases of limited discrimination training. 100% of males completed Phase 1 and Phase 3 of extensive discrimination. 50% of the females failed to meet criterion and 50% completed both phases with extensive training.

Supplementary Figure 4. (A) In lightest shade, the percentage of mice that escaped shocks. In medium shade, the percentage of mice that avoided shocks. In darkest shade, the percentage of mice that omitted trials. **(B)** Latency to nose-poke following cue-onset (S_{d2}) decreases with training during negative reinforcement (p>0.05). **(C)** At the end of extensive discrimination, animals make a high number of responses for sucrose with comparatively few incorrect (*p*<0.0001) and omitted (*p*<0.0001) responses. Animals respond similarly at the active nose-poke to avoid/escape shocks and make comparatively few incorrect (*p*<0.0001) and omitted (*p*<0.0001) responses. Data represented as mean ± S.E.M. *** *p*<0.0001.

Supplementary Figure 5. (A) Percent of total shocks received over the course of negative reinforcement training does not correlate with Log *d* (*p*>0.05, R=0.0033) or Log *b* (*p*>0.05, R=0.1305) in limited discrimination training or in **(B)** extensive discrimination training (Log *d*, *p*>0.05, R=0.0262) (Log *b*, *p*>0.05, R=0.2033). **(A)** There is a significant negative correlation between Log *b* and Log *d* in limited discrimination (*p*<0.01, R=0.4794) but not in **(B)** extensive discrimination (*p*>0.05, R=0.0753).

Supplementary Figure 6. Females are biased towards avoiding aversive outcomes. Males and females demonstrate divergent rates of learning for positive and reinforcement; however, while females learn negative reinforcement at a slower rate they are biased towards avoiding aversive outcomes when they are presented concurrently with options to obtain rewards. Further, females demonstrate a bias for punishment avoidance and males demonstrate a bias for reward-seeking in the face of an aversive stimulus.

Supplementary Table 1. *Cohen's d* values for each experiment.

Positive and Negative Reinforcement		Limited Discrimination and Conflict		Extensive Discrimination and Conflict		Punished Responding		Chemogenetic Inhibition	
Fig2B	0.28369	**Fig3B**	0.72412 - disc - M 0.345946 - disc - F 0.185084 - conf - M 3.640398 - conf - F	**Fig4B**	0.56478 - M 0.2921 - F	**Fig5B**	0.17111 - vocal 0.45555 - motor	**Fig6C**	1.9133
Fig2C	0.98997	**Fig3C**	1.10637 - log d 0.29479 - log b	**Fig4C**	0.29796	**Fig5C**	0.79299 - unpun 0.26472 - pun	**Fig6F**	0.56115
Fig2D	0.59021			**Fig4D**	1.09424 - disc - M 0.37737 - disc - F 2.40769 - conf - M 2.26948 - conf - F	**Fig5E**	0.92196	**Fig6E**	0.01392 - sucrose 0.0576 - shock
Fig2F	1.42893 - M 0.83181 - F			**Fig4E**	2.31675 - log d - M 2.73934 - log d - F 0.20027 - log b - M 0.66108 - log b - F	**Fig5G**	1.20926	**Fig6H**	0.36726 - sucrose 0.28841 - shock
Fig2G	0.06178			**Fig4F**	0.17486 - log d 0.2573 - log b	**Fig5H**	0.45748 - M 0.96693 - F		
						Fig5I	0.61213		