Figure	Variable	Unit of Comparison	n	Test	Results
Fig. 1G	decoding accuracy vs chance	10 decoding iterations for each region	pseudopopulation (see methods) of 454 cells (n-matched in vCA1 and dCA1) from 11 vCA1 and 5 dCA1 mice	Wilcoxon	color-coded bars above graph show time bins where $p < 0.01$
Fig. 1H	vCA1 vs dCA1 odor1/baseline decoding accuracies	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 and 5 dCA1 mice	Mann-Whitney U	$U = 0$, $p = 0.00017$, effect-size (r) = 0.85
Fig. 1H	vCA1 vs dCA1 odor2/baseline decoding accuracies	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 and 5 dCA1 mice	Mann-Whitney U	$U = 12.0$, $p = 0.0046$, effect-size (r) = 0.64
Fig. 1J	odor1/odor2 decoding accuracy, vCA1 vs dCA1	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 and 5 dCA1 mice	Mann-Whitney U	colored-coded bar above graph shows time bins where $p < 0.01$
Fig. 2D	mean lick rate (Hz)	Trial type (Early session)	15 mice (11 vCA1 and 4 dCA1 mice)	Mann-Whitney U	$U = 75.5$, $p = 0.13$, effect-size (r) = 0.28
Fig. 2D	mean lick rate (Hz)	Trial type (Late session)	15 mice (11 vCA1 and 4 dCA1 mice)	Mann-Whitney U	$U = 0$, $p < 0.0001$, effect-size (r) = 0.85
Fig. 2G	CS+/baseline vs CS-/baseline decoding accuracies, vCA1 or dCA1	10 decoding iterations for each trial type	n-matched pseudopopulation of 454 cells from 11 vCA1 or 4 dCA1 mice	Mann-Whitney U	color-coded bars above graph show time bins where $p < 0.01$
Fig. 2H	vCA1 vs dCA1 CS+/baseline decoding accuracies during odor period (Pre session)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 and 4 dCA1 mice	Mann-Whitney U	$U = 0$, $p = 0.00017$, effect-size (r) = 0.85
Fig. 2H	vCA1 vs dCA1 CS+/baseline decoding accuracies during odor period (Late session)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 and 5 dCA1 mice	Mann-Whitney U	$U = 69.5$, $p = 0.15$, effect-size (r) = 0.33
Fig. 2H	vCA1 vs dCA1 CS+/baseline decoding accuracies during trace period (Pre session)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 and 4 dCA1 mice	Mann-Whitney U	$U = 25.5$, $p = 0.069$, effect-size (r) = 0.41
Fig. 2H	vCA1 vs dCA1 CS+/baseline decoding accuracies during trace period (Late session)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 and 5 dCA1 mice	Mann-Whitney U	$U = 56$, $p = 0.68$, effect-size (r) = 0.10
Fig. 2J	vCA1 vs dCA1 CS+/CS- decoding accuracies during odor period (Pre session)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 and 4 dCA1 mice	Mann-Whitney U	$U = 0$, $p = 0.00018$, effect-size (r) = 0.85
Fig. 2J	vCA1 vs dCA1 CS+/CS- decoding accuracies during odor period (Late session)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 and 5 dCA1 mice	Mann-Whitney U	$U = 44$, $p = 0.68$, effect-size (r) = 0.10
Fig. 2J	vCA1 vs dCA1 CS+/CS- decoding accuracies during trace period (Pre session)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 and 4 dCA1 mice	Mann-Whitney U	$U = 25$, $p = 0.064$, effect-size (r) = 0.42
Fig. 2J	vCA1 vs dCA1 CS+/CS- decoding accuracies during trace period (Late session)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 and 5 dCA1 mice	Mann-Whitney U	$U = 32$, $p = 0.18$, effect-size (r) = 0.30
Fig. 2L	within-session Early vs within-session Late CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 11 vCA1 and 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	$U = 0$, $p < 0.001$, effect-size (r) = 0.85
Fig. 2L	within-session Early vs across-session Early/Late CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 11 vCA1 and 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	$U = 87$, $p = 0.,011$ effect-size (r) = 0.63
Fig. 2L	within-session Late vs across-session Early/Late CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 11 vCA1 and 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	$U = 0$, $p < 0.001$, effect-size (r) = 0.85
Fig. 2L	within-session Early vs within-session Late CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 11 vCA1 and 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	$U = 56$, $p = 1$, effect-size (r) = 0.1
Fig. 2L	within-session Early vs across-session Early/Late CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 11 vCA1 and 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	$U = 99$, $p < 0.001$, effect-size (r) = 0.83
Fig. 2L	within-session Late vs across-session Early/Late CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 11 vCA1 and 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	$U = 0$, $p < 0.001$, effect-size (r) = 0.85
Fig. 2L	within-session Early vs within-session Late CS+/CS- decoding accuracies during trace period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 11 vCA1 and 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	$U = 2$, $p < 0.001$, effect-size (r) = 0.81
Fig. 2L	within-session Early vs across-session Early/Late CS+/CS- decoding accuracies during trace period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 11 vCA1 and 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	$U = 75$, $p = 0.13$, effect-size (r) = 0.42
Fig. 2L	within-session Late vs across-session Early/Late CS+/CS- decoding accuracies during trace period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 11 vCA1 and 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	$U = 100$, $p < 0.001$, effect-size (r) = 0.85
Fig. 2L	within-session Early vs within-session Late CS+/CS- decoding accuracies during trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 11 vCA1 and 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	$U = 0$, $p < 0.001$, effect-size (r) = 0.85
Fig. 2L	within-session Early vs across-session Early/Late CS+/CS- decoding accuracies during trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 11 vCA1 and 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	$U = 64$, $p = 0.61$, effect-size (r) = 0.24
Fig. 2L	within-session Late vs across-session Early/Late CS+/CS- decoding accuracies during trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 11 vCA1 and 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	$U = 100$, $p < 0.001$, effect-size (r) = 0.85

Figure	Variable	Unit of Comparison	n	Test	Results
Fig. 3C	mean lick rate (Hz)	Trial type (Early session)	6 mice (4 vCA1, 2 dCA1)	Mann-Whitney U	U =82, p =0.21, effect-size (r) = 0.22
Fig. 3C	mean lick rate (Hz)	Trial type (Late session)	6 mice (4 vCA1, 2 dCA1)	Mann-Whitney U	U =0, p < 0.0001, effect-size (r) = 0.85
Fig. 3D	decoding accuracy vs chance, vCA1 vs dCA1	10 decoding iterations for each region	n-matched pseudopopulation of 537 cells from 4 vCA1 and 2 dCA1 mice	Wilcoxon	color-coded bars above graph show time bins where p < 0.01
Fig. 3E	vCA1 vs dCA1 CS+/baseline decoding accuracies during tone period (Early session)	10 decoding iterations for each region	n-matched pseudopopulation of 537 cells from 4 vCA1 and 2 dCA1 mice	Mann-Whitney U	U = 15, p = 0.009, effect-size (r) = 0.59
Fig. 3E	vCA1 vs dCA1 CS+/baseline decoding accuracies during tone period (Late session)	10 decoding iterations for each region	n-matched pseudopopulation of 537 cells from 4 vCA1 and 2 dCA1 mice	Mann-Whitney U	U = 38, p = 0.38, effect-size (r) = 0.2
Fig. 3E	vCA1 vs dCA1 CS+/baseline decoding accuracies during trace period (Early session)	10 decoding iterations for each region	n-matched pseudopopulation of 537 cells from 4 vCA1 and 2 dCA1 mice	Mann-Whitney U	U = 89, p = 0.004, effect-size (r) = 0.66
Fig. 3E	vCA1 vs dCA1 CS+/baseline decoding accuracies during trace period (Late session)	10 decoding iterations for each region	n-matched pseudopopulation of 537 cells from 4 vCA1 and 2 dCA1 mice	Mann-Whitney U	U = 40.5, p = 0.5, effect-size (r) = 0.16
Fig. 3F	CS+/CS- decoding accuracy, vCA1 vs dCA1	10 decoding iterations for each region	n-matched pseudopopulation of 537 cells from 4 vCA1 and 2 dCA1 mice	Mann-Whitney U	colored-coded bar above graph shows time bins where p < 0.01
Fig. 3G	vCA1 vs dCA1 CS+/CS- decoding accuracies during tone period (Early session)	10 decoding iterations for each region	n-matched pseudopopulation of 537 cells from 4 vCA1 and 2 dCA1 mice	Mann-Whitney U	U = 52, p = 0.91, effect-size (r) = 0.03
Fig. 3G	vCA1 vs dCA1 CS+/CS- decoding accuracies during tone period (Late session)	10 decoding iterations for each region	n-matched pseudopopulation of 537 cells from 4 vCA1 and 2 dCA1 mice	Mann-Whitney U	U = 99, p < 0.001, effect-size (r) = 0.82
Fig. 3G	vCA1 vs dCA1 CS+/CS- decoding accuracies during trace period (Early session)	10 decoding iterations for each region	n-matched pseudopopulation of 537 cells from 4 vCA1 and 2 dCA1 mice	Mann-Whitney U	U = 77, p = 0.045, effect-size (r) = 0.46
Fig. 3G	vCA1 vs dCA1 CS+/CS- decoding accuracies during trace period (Late session)	10 decoding iterations for each region	n-matched pseudopopulation of 537 cells from 4 vCA1 and 2 dCA1 mice	Mann-Whitney U	U = 51, p = 0.97, effect-size (r) = 0.02
Fig. 4E	Early vs Late CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	Mann-Whitney U, Bonferroni correction for n=3	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. 4E	Early vs Ext CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	Mann-Whitney U, Bonferroni correction for n=3	U = 83.5, p = 0.038, effect-size (r) = 0.57
Fig. 4E	Early vs Reacq CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	Mann-Whitney U, Bonferroni correction for n=3	U =13.5 , p = 0.019, effect-size (r) = 0.62
Fig. 4E	Late vs Ext CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	Mann-Whitney U, Bonferroni correction for n=3	U = 100, p < 0.001, effect-size (r) = 0.85
Fig. 4E	Late vs Reacq CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	Mann-Whitney U, Bonferroni correction for n=3	U = 99, p < 0.001, effect-size (r) = 0.83
Fig. 4E	Ext vs Reacq CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	Mann-Whitney U, Bonferroni correction for n=3	U = 2.5, p = 0.001, effect-size (r) = 0.80
Fig. 4E	Early vs Late CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=3	U = 42, p = 1, effect-size (r) = 0.14
Fig. 4E	Early vs Ext CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=3	U = 70.5, p = 0.39, effect-size (r) = 0.35
Fig. 4E	Early vs Reacq CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=3	U = 62.5, p = 1, effect-size (r) = 0.21
Fig. 4E	Late vs Ext CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=3	U = 79.5, p = 0.1, effect-size (r) = 0.13
Fig. 4E	Late vs Reacq CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=3	U = 74, p = 0.22, effect-size (r) = 0.41
Fig. 4E	Ext vs Reacq CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=3	U = 42, p = 1, effect-size (r) = 0.13
Fig. 4E	Early vs Late CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	Mann-Whitney U, Bonferroni correction for n=3	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. 4E	Early vs Ext CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	Mann-Whitney U, Bonferroni correction for n=3	U = 58.5, p = 1, effect-size (r) = 0.14

Figure	Variable	Unit of Comparison	n	Test	Results
Fig. 4E	Early vs Reacq CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	Mann-Whitney U, Bonferroni correction for n=3	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. 4E	Late vs Ext CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	Mann-Whitney U, Bonferroni correction for n=3	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. 4E	Late vs Reacq CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	Mann-Whitney U, Bonferroni correction for n=3	U = 46.5, p = 1., effect-size (r) = 0.14
Fig. 4E	Ext vs Reacq CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	Mann-Whitney U, Bonferroni correction for n=3	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. 4E	Early vs Late CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=3	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. 4E	Early vs Ext CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=3	U = 26, p = 0.23, effect-size (r) = 0.41
Fig. 4E	Early vs Reacq CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=3	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. 4E	Late vs Ext CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=3	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. 4E	Late vs Reacq CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=3	U = 80.5, p = 0.07, effect-size (r) = 0.52
Fig. 4E	Ext vs Reacq CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each region	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=3	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. 4F	within-session Late vs within-session Reacq CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 10 vCA1 and 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 51.5, p = 1, effect-size (r) = 0.03
Fig. 4F	within-session Late vs across-session Late/Reacq CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 10 vCA1 and 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 81.5, p = 0.03, effect-size (r) = 0.53
Fig. 4F	within-session Reacq vs across-session Late/Reacq CS+/CS- decoding accuracies during odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 10 vCA1 and 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 92.5, p = 0.003, effect-size (r) = 0.72
Fig. 4F	within-session Late vs within-session Reacq CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 10 vCA1 and 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U 55= , p = 1, effect-size (r) = 0.08
Fig. 4F	within-session Late vs across-session Late/Reacq CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 10 vCA1 and 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 77, p = 0.09, effect-size (r) = 0.46
Fig. 4F	within-session Reacq vs across-session Late/Reacq CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 10 vCA1 and 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 96, p = 0.001, effect-size (r) = 0.78
Fig. 4F	within-session Late vs within-session Reacq CS+/CS- decoding accuracies during trace period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 10 vCA1 and 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 45, p = 1, effect-size (r) = 0.08
Fig. 4F	within-session Late vs across-session Late/Reacq CS+/CS- decoding accuracies during trace period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 10 vCA1 and 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 72, p = 0.21, effect-size (r) = 0.37
Fig. 4F	within-session Reacq vs across-session Late/Reacq CS+/CS- decoding accuracies during trace period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 10 vCA1 and 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 81, p = 0.042, effect-size (r) = 0.52
Fig. 4F	within-session Late vs within-session Reacq CS+/CS- decoding accuracies during trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 10 vCA1 and 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 78, p = 0.08, effect-size (r) = 0.47
Fig. 4F	within-session Late vs across-session Late/Reacq CS+/CS- decoding accuracies during trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 10 vCA1 and 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 92.5, p = 0.003, effect-size (r) = 0.72
Fig. 4F	within-session Reacq vs across-session Late/Reacq CS+/CS- decoding accuracies during trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 10 vCA1 and 4 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 83, p = 0.028, effect-size (r) = 0.55
Fig. 4G	Across-session Early/Late vs Late/Reacq CS+/CS- decoding accuracies during dodr period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 10 vCA1 mice	Mann-Whitney U	U = 10, p = 0.003, effect-size (r) = 0.68
Fig. 4G	Across-session Early/Late vs Late/Reacq CS+/CS- decoding accuracies during odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 4 dCA1 mice	Mann-Whitney U	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. 4G	Across-session Early/Late vs Late/Reacq CS+/CS- decoding accuracies during trace period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 10 vCA1 mice	Mann-Whitney U	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. 4G	Across-session Early/Late vs Late/Reacq CS+/CS- decoding accuracies during trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 241 cells from 4 dCA1 mice	Mann-Whitney U	U = 0, p < 0.001, effect-size (r) = 0.85

Figure	Variable	Unit of Comparison	n	Test	Results
Fig. 5B	CS+/CS- decoding accuracy, vCA1 vs dCA1	10 decoding iterations for each	n-matched pseudopopulation of 339 cells from 7 vCA1 and 2 dCA1 mice	Mann-Whitney U	see figure for color-coded p-values
Fig. 5C	CS+/CS- Early decoding accuracy, vCA1 vs dCA1	n = 19 (mean of each time bin x vs time bin y decoding result (each blue square in fig))	n-matched pseudopopulation of 339 cells from 7 vCA1 and 2 dCA1 mice	Mann-Whitney U	U = 254, p = 0.033, effect-size (r) = 0.35
Fig. 5C	CS+/CS- Late decoding accuracy, vCA1 vs dCA1	n = 19 (mean of each time bin x vs time bin y decoding result (each blue square in fig))	n-matched pseudopopulation of 339 cells from 7 vCA1 and 2 dCA1 mice	Mann-Whitney U	U =313 , p < 0.001., effect-size (r) = 0.63
Fig. 5C	CS+/CS- Extinction decoding accuracy, vCA1 vs dCA1	n = 19 (mean of each time bin x vs time bin y decoding result (each blue square in fig))	n-matched pseudopopulation of 339 cells from 7 vCA1 and 2 dCA1 mice	Mann-Whitney U	U = 236.5, p = 0.11, effect-size (r) = 0.27
Fig. 5C	CS+/CS- Reacquisition decoding accuracy, vCA1 vs dCA1	n = 19 (mean of each time bin x vs time bin y decoding result (each blue square in fig))	n-matched pseudopopulation of 339 cells from 7 vCA1 and 2 dCA1 mice	Mann-Whitney U	U = 321, p < 0.001, effect-size (r) = 0.67
Fig. 6B	mean lick rate (Hz)	Trial type (CS1+ vs CS2+; Early session)	9 mice (7vCA1 and 2 dCA1 mice)	Mann-Whitney U	U = 18, p = 0.94, effect-size (r) = 0
Fig. 6B	mean lick rate (Hz)	Trial type (CS3- vs CS4-; Early session)	9 mice (7vCA1 and 2 dCA1 mice)	Mann-Whitney U	U = 14, p = 0.58, effect-size (r) = 0.18
Fig. 6B	mean lick rate (Hz)	Trial type (CS+ vs CS-; Early session)	9 mice (7vCA1 and 2 dCA1 mice)	Mann-Whitney U	U = 129, p = 0.001, effect-size (r) = 0.67
Fig. 6B	mean lick rate (Hz)	Trial type (CS1+ vs CS2+; Late session)	9 mice (7vCA1 and 2 dCA1 mice)	Mann-Whitney U	U = 92.5, p = 0.82, effect-size (r) = 0.05
Fig. 6B	mean lick rate (Hz)	Trial type (CS3- vs CS4-; Late session)	9 mice (7vCA1 and 2 dCA1 mice)	Mann-Whitney U	U = 84, p = 0.53, effect-size (r) = 0.12
Fig. 6B	mean lick rate (Hz)	Trial type (CS+ vs CS-; Late session)	9 mice (7vCA1 and 2 dCA1 mice)	Mann-Whitney U	U = 784, p < 0.001, effect-size (r) = 0.86
Fig. 6D	outcome decoding, odor period vs trace period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 339 cells from 7 vCA1 mice	Mann-Whitney U	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. 6D	outcome decoding, odor period vs trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 339 cells from 2 dCA1 mice	Mann-Whitney U	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. 7B	mean lick rate (Hz)	Trial type (Rew vs Shock; Early session)	13 mice (10 vCA1 and 3 dCA1 mice)	Mann-Whitney U, Bonferroni correction for n=2	U = 133, p = 0.028, effect-size (r) = 0.49
Fig. 7B	mean lick rate (Hz)	Trial type (Rew vs CS-; Early session)	13 mice (10 vCA1 and 3 dCA1 mice)	Mann-Whitney U, Bonferroni correction for n=2	U = 13, p < 0.001, effect-size (r) = 0.71
Fig. 7B	mean lick rate (Hz)	Trial type (Shock vs CS-; Early session)	13 mice (10 vCA1 and 3 dCA1 mice)	Mann-Whitney U, Bonferroni correction for n=2	U = 12.5, p <0.001, effect-size (r) = 0.72
Fig. 7B	mean lick rate (Hz)	Trial type (Rew vs Shock; Late session)	13 mice (10 vCA1 and 3 dCA1 mice)	Mann-Whitney U, Bonferroni correction for n=2	U = 256, p = < 0.001, effect-size (r) = 1.7
Fig. 7B	mean lick rate (Hz)	Trial type (Rew vs CS-; Late session)	13 mice (10 vCA1 and 3 dCA1 mice)	Mann-Whitney U, Bonferroni correction for n=2	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. 7B	mean lick rate (Hz)	Trial type (Shock vs CS-; Late session)	13 mice (10 vCA1 and 3 dCA1 mice)	Mann-Whitney U, Bonferroni correction for n=2	U = 0, p = 1, effect-size (r) = 0.56
Fig. 7E	CS+Rew Decoding Accuracy, Early vs Late, odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 10 vCA1 mice	Fisher's Exact	p < 0.001, effect-size (odds ratio) = 0.23
Fig. 7E	CS+Shock Decoding Accuracy, Early vs Late, odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 10 vCA1 mice	Fisher's Exact	p < 0.001, effect-size (odds ratio) = 0.24
Fig. 7E	CS- Decoding Accuracy, Early vs Late, odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 10 vCA1 mice	Fisher's Exact	p = 0.14, effect-size (odds ratio) = 0.72
Fig. 7E	CS+Rew Decoding Accuracy, Early vs Late,trace period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 10 vCA1 mice	Fisher's Exact	p < 0.001, effect-size (odds ratio) = 0.26
Fig. 7E	CS+Shock Decoding Accuracy, Early vs Late, trace period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 10 vCA1 mice	Fisher's Exact	p < 0.001, effect-size (odds ratio) = 0.40
Fig. 7E	CS- Decoding Accuracy, Early vs Late, trace period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 10 vCA1 mice	Fisher's Exact	p = 0.24, effect-size (odds ratio) = 0.76
Fig. 7F	CS+Rew Decoding Accuracy, Early vs Late,odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 3 dCA1 mice	Fisher's Exact	p = 0.003, effect-size (odds ratio) = 0.18
Fig. 7F	CS+Shock Decoding Accuracy, Early vs Late, odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 3 dCA1 mice	Fisher's Exact	p = 0.32, effect-size (odds ratio) = 0.63
Fig. 7F	CS- Decoding Accuracy, Early vs Late, odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 3 dCA1 mice	Fisher's Exact	p = 0.73, effect-size (odds ratio) = 0.88
Fig. 7F	CS+Rew Decoding Accuracy, Early vs Late,trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 3 dCA1 mice	Fisher's Exact	p < 0.001, effect-size (odds ratio) = 0.17
Fig. 7F	CS+Shock Decoding Accuracy, Early vs Late, trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 3 dCA1 mice	Fisher's Exact	p = 0.003, effect-size (odds ratio) = 0.48
Fig. 7F	CS- Decoding Accuracy, Early vs Late, trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 3 dCA1 mice	Fisher's Exact	p = 0.003, effect-size (odds ratio) = 0.52
Fig. 7H	CS+Rew/CS- Late decoding accuracy, vCA1 vs dCA1	n = 19 (mean of each time bin x vs time bin y decoding result (each blue square in fig))	n-matched pseudopopulation of 444 cells from 10 vCA1 and 3 dCA1 mice	Mann-Whitney U	U = 346, p <0.001, effect-size (r) = 0.79

Figure	Variable	Unit of Comparison	n	Test	Results
Fig. 7J	CS+Shock/CS- Late decoding accuracy, vCA1 vs dCA1	n = 19 (mean of each time bin x vs time bin y decoding result (each blue square in fig))	n-matched pseudopopulation of 444 cells from 10 vCA1 and 3 dCA1 mice	Mann-Whitney U	U = 326, p < 0.001, effect-size (r) = 0.69
Fig. 7L	mean lick rate (Hz)	Trial type (Rew vs Shock; Early Reversal session)	13 mice (10 vCA1 and 3 dCA1 mice)	Mann-Whitney U, Bonferroni correction for n=2	U = 82, p = 1, effect-size (r) = 0.02
Fig. 7L	mean lick rate (Hz)	Trial type (Rew vs CS-; Early Reversal session)	13 mice (10 vCA1 and 3 dCA1 mice)	Mann-Whitney U, Bonferroni correction for n=2	U = 21.5, p = 0.003, effect-size (r) = 0.62
Fig. 7L	mean lick rate (Hz)	Trial type (Shock vs CS-; Early Reversal session)	13 mice (10 vCA1 and 3 dCA1 mice)	Mann-Whitney U, Bonferroni correction for n=2	U = 10, p <0.001, effect-size (r) = 0.74
Fig. 7L	mean lick rate (Hz)	Trial type (Rew vs Shock; Late Reversal session)	13 mice (10 vCA1 and 3 dCA1 mice)	Mann-Whitney U, Bonferroni correction for n=2	U = 255, p = < 0.001, effect-size (r) = 1.7
Fig. 7L	mean lick rate (Hz)	Trial type (Rew vs CS-; Late Reversal session)	13 mice (10 vCA1 and 3 dCA1 mice)	Mann-Whitney U, Bonferroni correction for n=2	U = 3, p < 0.001, effect-size (r) = 0.81
Fig. 7L	mean lick rate (Hz)	Trial type (Shock vs CS-; Late Reversal session)	13 mice (10 vCA1 and 3 dCA1 mice)	Mann-Whitney U, Bonferroni correction for n=2	U = 110, p = 1, effect-size (r) = 0.26
Fig. 7M	Odor A/baseline vs odor B/baseline decoding accuracies across reversal training, odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 281 cells from 10 vCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 42.5, p = 1, effect-size (r) = 0.13
Fig. 7M	Odor A/baseline vs odor C/baseline decoding accuracies across reversal training, odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 281 cells from 10 vCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. 7M	Odor B/baseline vs odor C/baseline decoding accuracies across reversal training, odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 281 cells from 10 vCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. 7M	Odor A/baseline vs odor B/baseline decoding accuracies across reversal training, odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 281 cells from 3 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 36, p = 0.61, effect-size (r) = 0.24
Fig. 7M	Odor A/baseline vs odor C/baseline decoding accuracies across reversal training, odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 281 cells from 3 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 39.5, p = .9, effect-size (r) = 0.18
Fig. 7M	Odor B/baseline vs odor C/baseline decoding accuracies across reversal training, odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 281 cells from 3 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 28, p = .21, effect-size (r) = 0.37
Fig. 7N	CS+Rew/baseline vs CS+Shock/baseline decoding accuracies across reversal training, trace period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 281 cells from 10 vCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 100, p < 0.001, effect-size (r) = 0.85
Fig. 7N	CS+Rew/baseline vs CS-/baseline decoding accuracies across reversal training, trace period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 281 cells from 10 vCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. 7N	CS+Shock/baseline vs CS-/baseline decoding accuracies across reversal training, trace period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 281 cells from 10 vCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 55, p = 1, effect-size (r) = 0.08
Fig. 7N	CS+Rew/baseline vs CS+Shock/baseline decoding accuracies across reversal training, trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 281 cells from 3 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 100, p < 0.001, effect-size (r) = 0.85
Fig. 7N	CS+Rew/baseline vs CS-/baseline decoding accuracies across reversal training, trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 281 cells from 3 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. 7N	CS+Shock/baseline vs CS-/baseline decoding accuracies across reversal training, trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 281 cells from 3 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 49, p = 1, effect-size (r) = 0.17
Fig. 7O	CS+Rew/baseline vs CS+Shock/baseline decoding accuracies, Late Reversal, odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 10 vCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 100, p < 0.001, effect-size (r) = 0.85
Fig. 7O	CS+Rew/baseline vs CS-/baseline decoding accuracies, Late Reversal, odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 10 vCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 100, p < 0.001, effect-size (r) = 0.85
Fig. 7O	CS+Shock/baseline vs CS-/baseline decoding accuracies, Late Reversal, odor period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 10 vCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 97, p < 0.001, effect-size (r) = 0.79
Fig. 7O	CS+Rew/baseline vs CS+Shock/baseline decoding accuracies, Late Reversal, odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 3 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 17.5, p = 0.03, effect-size (r) = 0.55
Fig. 7O	CS+Rew/baseline vs CS-/baseline decoding accuracies, Late Reversal, odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 3 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 27.5, p = 0.19, effect-size (r) = 0.38
Fig. 7O	CS+Shock/baseline vs CS-/baseline decoding accuracies, Late Reversal, odor period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 3 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 55.5, p = 1, effect-size (r) = 0.09

Figure	Variable	Unit of Comparison	n	Test	Results
Fig. 7O	CS+Rew/baseline vs CS+Shock/baseline decoding accuracies, Late Reversal, trace period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 10 vCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 100, p < 0.001, effect-size (r) = 0.85
Fig. 7O	CS+Rew/baseline vs CS-/baseline decoding accuracies, Late Reversal, trace period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 10 vCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 100, p < 0.001, effect-size (r) = 0.85
Fig. 7O	CS+Shock/baseline vs CS-/baseline decoding accuracies, Late Reversal, trace period (vCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 10 vCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 22.5, p = 0.08, effect-size (r) = 0.46
Fig. 7O	CS+Rew/baseline vs CS+Shock/baseline decoding accuracies, Late Reversal, trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 3 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 100, p < 0.001, effect-size (r) = 0.85
Fig. 7O	CS+Rew/baseline vs CS-/baseline decoding accuracies, Late Reversal, trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 3 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 100, p < 0.001, effect-size (r) = 0.85
Fig. 7O	CS+Shock/baseline vs CS-/baseline decoding accuracies, Late Reversal, trace period (dCA1)	10 decoding iterations for each	n-matched pseudopopulation of 444 cells from 3 dCA1 mice	Mann-Whitney U, Bonferroni correction for n=2	U = 23.5, p = 0.095, effect-size (r) = 0.45
Fig. S2C	CS+ responsive cells during odor period, Early vs Late (vCA1)	total combined cells from 11 vCA1 mice	see figure for exact cell numbers	Fisher's Exact	p = 0.003, effect-size (odds ratio) = 2.02
Fig. S2C	CS- responsive cells during odor period, Early vs Late (vCA1)	total combined cells from 11 vCA1 mice	see figure for exact cell numbers	Fisher's Exact	p = 0.13, effect-size (odds ratio) = 0.6
Fig. S2C	CS+ responsive cells during trace period, Early vs Late (vCA1)	total combined cells from 11 vCA1 mice	see figure for exact cell numbers	Fisher's Exact	p < 0.001, effect-size (odds ratio) = 4.56
Fig. S2C	CS- responsive cells during trace period, Early vs Late (vCA1)	total combined cells from 11 vCA1 mice	see figure for exact cell numbers	Fisher's Exact	p = 0.055, effect-size (odds ratio) = 6.96
Fig. S2C	CS+ responsive cells during odor period, Early vs Late (dCA1)	total combined cells from 4 dCA1 mice	see figure for exact cell numbers	Fisher's Exact	p < 0.001, effect-size (odds ratio) = 2.7
Fig. S2C	CS- responsive cells during odor period, Early vs Late (dCA1)	total combined cells from 4 dCA1 mice	see figure for exact cell numbers	Fisher's Exact	p = 0.38, effect-size (odds ratio) = 0.79
Fig. S2C	CS+ responsive cells during trace period, Early vs Late (dCA1)	total combined cells from 4 dCA1 mice	see figure for exact cell numbers	Fisher's Exact	p < 0.001, effect-size (odds ratio) = 8.24
Fig. S2C	CS- responsive cells during trace period, Early vs Late (dCA1)	total combined cells from 4 dCA1 mice	see figure for exact cell numbers	Fisher's Exact	p = 0.004, effect-size (odds ratio) = 11.3
Fig. S2D	CS+/baseline (upper) or CS-/baseline (lower) decoding accuracies, Pre vs Late sessions	10 decoding iterations for each	n-matched pseudopopulation of 454 cells from 11 vCA1 or 5 dCA1 mice	Mann-Whitney U	color-coded bars above graph show time bins where p < 0.01
Fig. S2G	CS+/CS- decoding accuracy, odor period	pre vs post 'aha' point	11 vCA1 mice	Mann-Whitney U	U = 21 , p = .031, effect-size (r) = 0.49
Fig. S2G	CS+/CS- decoding accuracy, trace period	pre vs post 'aha' point	11 vCA1 mice	Mann-Whitney U	U = 0 , p < .001, effect-size (r) = 0.84
Fig. S2G	CS+/CS- decoding accuracy, odor period	pre vs post 'aha' point	4 dCA1 mice	Mann-Whitney U	U = 27, p = 0.089., effect-size (r) = 0.39
Fig. S2G	CS+/CS- decoding accuracy, trace period	pre vs post 'aha' point	4 dCA1 mice	Mann-Whitney U	U = 19 , p = .021., effect-size (r) = 0.52.
Fig. S2H	Early vs Late linear regression of decoding accuracy and lick rate	Early vs Late sessions	10 vCA1 mice	T-test	U = 1.86, p = 0.079, effect-size (Cohen's d) = 0.88
Fig. S2H	Early vs Late linear regression of decoding accuracy and lick rate	Early vs Late sessions	5 dCA1 mice	T-test	U = 1.51 p = 0.17, effect-size (Cohen's d) = 1.07
Fig. S2I	odor period vs trace period decoding accuracy vs chance	10 decoding iterations	pseudopopulation of 454 cells from 11 vCA1 mice	Wilcoxon	W = 0, p = 0.005, effect-size (r) = 0.85
Fig. S2I	odor period vs trace period decoding accuracy vs chance	10 decoding iterations	pseudopopulation of 454 cells from 5 dCA1 mice	Wilcoxon	W = 0, p = 0.005, effect-size (r) = 0.85
Fig. S3C	CS+/baseline decoding accuracies during tone period, Early vs Late session (vCA1)	10 decoding iterations for each session	n-matched pseudopopulation of 537 cells from 4 vCA1 mice	Mann-Whitney U	U = 24, p = 0.054, effect-size (r) = 0.44
Fig. S3C	CS+/baseline decoding accuracies during tone period, Early vs Late session (dCA1)	10 decoding iterations for each session	n-matched pseudopopulation of 537 cells from 2 dCA1 mice	Mann-Whitney U	U = 40, p = 0.47, effect-size (r) = 0.17
Fig. S3D	CS-/baseline decoding accuracies during tone period, Early vs Late session (vCA1)	10 decoding iterations for each session	n-matched pseudopopulation of 537 cells from 4 vCA1 mice	Mann-Whitney U	U = 47, p = 0.85, effect-size (r) = 0.05
Fig. S3D	CS-/baseline decoding accuracies during tone period, Early vs Late session (dCA1)	10 decoding iterations for each session	n-matched pseudopopulation of 537 cells from 2 dCA1 mice	Mann-Whitney U	U = 29.5, p = 0.13, effect-size (r) = 0.35
Fig. S3E	mean lick rate (Hz)	Trial type (Early session)	3 vCA1 mice (non-learners only)	Mann-Whitney U	U = 4, p = 1, effect-size (r) = 0.0
Fig. S3E	mean lick rate (Hz)	Trial type (Late session)	3 vCA1 mice (non-learners only)	Mann-Whitney U	U = 2, p = 0.38, effect-size (r) = 0.37
Fig. S3F	CS+/CS- decoding accuracy. Early vs Late	10 decoding iterations for each session	n-matched pseudopopulation of 71 cells from 4 vCA1 (learner), 3 vCA1 (nonlearner), or 2 dCA1 (learner) mice	Mann-Whitney U	color-coded bars above graph show time bins where p < 0.01

Figure	Variable	Unit of Comparison	n	Test	Results
Fig. S3G	CS+/CS- decoding accuracy, tone period, vCA1 nonlearners vs vCA1 learners (Early)	10 decoding iterations for each	n-matched pseudopopulation of 71 cells from 4 vCA1 (learner), 3 vCA1 (nonlearner), or 2 dCA1 (learner) mice	Mann-Whitney U, Bonferroni correction for n=2	U = 30, p = 0.28, effect-size (r) = 0.34
Fig. S3G	CS+/CS- decoding accuracy, tone period, vCA1 nonlearners vs dCA1 learners (Early)	10 decoding iterations for each	n-matched pseudopopulation of 71 cells from 4 vCA1 (learner), 3 vCA1 (nonlearner), or 2 dCA1 (learner) mice	Mann-Whitney U, Bonferroni correction for n=2	U = 70, p = 0.27, effect-size (r) = 0.34
Fig. S3G	CS+/CS- decoding accuracy, tone period, vCA1 learners vs dCA1 learners (Early)	10 decoding iterations for each	n-matched pseudopopulation of 71 cells from 4 vCA1 (learner), 3 vCA1 (nonlearner), or 2 dCA1 (learner) mice	Mann-Whitney U, Bonferroni correction for n=2	U = 83, p = 0.028, effect-size (r) = 0.56
Fig. S3G	CS+/CS- decoding accuracy, tone period, vCA1 nonlearners vs vCA1 learners (Late)	10 decoding iterations for each	n-matched pseudopopulation of 71 cells from 4 vCA1 (learner), 3 vCA1 (nonlearner), or 2 dCA1 (learner) mice	Mann-Whitney U, Bonferroni correction for n=2	U = 3, p < 0.001, effect-size (r) = 0.79
Fig. S3G	CS+/CS- decoding accuracy, tone period, vCA1 nonlearners vs dCA1 learners (Late)	10 decoding iterations for each	n-matched pseudopopulation of 71 cells from 4 vCA1 (learner), 3 vCA1 (nonlearner), or 2 dCA1 (learner) mice	Mann-Whitney U, Bonferroni correction for n=2	U = 29.5, p = 0.26, effect-size (r) = 0.35
Fig. S3G	CS+/CS- decoding accuracy, tone period, vCA1 learners vs dCA1 learners (Late)	10 decoding iterations for each	n-matched pseudopopulation of 71 cells from 4 vCA1 (learner), 3 vCA1 (nonlearner), or 2 dCA1 (learner) mice	Mann-Whitney U, Bonferroni correction for n=2	U = 92, p = 0.003, effect-size (r) = 0.71
Fig. S3G	CS+/CS- decoding accuracy, trace period, vCA1 nonlearners vs vCA1 learners (Early)	10 decoding iterations for each	n-matched pseudopopulation of 71 cells from 4 vCA1 (learner), 3 vCA1 (nonlearner), or 2 dCA1 (learner) mice	Mann-Whitney U, Bonferroni correction for n=2	U = 28, p = 0.21, effect-size (r) = 0.37
Fig. S3G	CS+/CS- decoding accuracy, trace period, vCA1 nonlearners vs dCA1 learners (Early)	10 decoding iterations for each	n-matched pseudopopulation of 71 cells from 4 vCA1 (learner), 3 vCA1 (nonlearner), or 2 dCA1 (learner) mice	Mann-Whitney U, Bonferroni correction for n=2	U = 40.5, p = 0.99, effect-size (r) = 0.16
Fig. S3G	CS+/CS- decoding accuracy, trace period, vCA1 learners vs dCA1 learners (Early)	10 decoding iterations for each	n-matched pseudopopulation of 71 cells from 4 vCA1 (learner), 3 vCA1 (nonlearner), or 2 dCA1 (learner) mice	Mann-Whitney U, Bonferroni correction for n=2	U = 57.5, p = 1.0, effect-size (r) = 0.13
Fig. S3G	CS+/CS- decoding accuracy, trace period, vCA1 nonlearners vs vCA1 learners (Late)	10 decoding iterations for each	n-matched pseudopopulation of 71 cells from 4 vCA1 (learner), 3 vCA1 (nonlearner), or 2 dCA1 (learner) mice	Mann-Whitney U, Bonferroni correction for n=2	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. S3G	CS+/CS- decoding accuracy, trace period, vCA1 nonlearners vs dCA1 learners (Late)	10 decoding iterations for each	n-matched pseudopopulation of 71 cells from 4 vCA1 (learner), 3 vCA1 (nonlearner), or 2 dCA1 (learner) mice	Mann-Whitney U, Bonferroni correction for n=2	U = 3, p < 0.001, effect-size (r) = 0.8
Fig. S3G	CS+/CS- decoding accuracy, trace period, vCA1 learners vs dCA1 learners (Late)	10 decoding iterations for each	n-matched pseudopopulation of 71 cells from 4 vCA1 (learner), 3 vCA1 (nonlearner), or 2 dCA1 (learner) mice	Mann-Whitney U, Bonferroni correction for n=2	U = 64, p = 0.61, effect-size (r) = 0.24
Fig. S4A	CS+/baseline vs CS-/baseline decoding accuracies	10 decoding iterations for each trial type	n-matched pseudopopulation of 454 cells from 11 vCA1 or 4 dCA1 mice	Mann-Whitney U	color-coded bars above graph show time bins where p < 0.01
Fig. S4B	CS+/baseline decoding accuracies, odor period, Early vs Late, vCA1	10 decoding iterations for each session	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	Mann-Whitney U, bonferroni correction for n=3	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. S4B	CS+/baseline decoding accuracies, odor period, Early vs Ext2, vCA1	10 decoding iterations for each session	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	Mann-Whitney U, bonferroni correction for n=3	U = 27.5, p = 0.29, effect-size (r) = 0.38
Fig. S4B	CS+/baseline decoding accuracies, odor period, Early vs Reacquisition, vCA1	10 decoding iterations for each session	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	Mann-Whitney U, bonferroni correction for n=3	U = 3, p = 0.001, effect-size (r) = 0.79
Fig. S4B	CS+/baseline decoding accuracies, odor period, Late vs Ext2, vCA1	10 decoding iterations for each session	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	Mann-Whitney U, bonferroni correction for n=3	U = 100, p < 0.001, effect-size (r) = 0.85
Fig. S4B	CS+/baseline decoding accuracies, odor period, Late vs Reacquisition, vCA1	10 decoding iterations for each session	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	Mann-Whitney U, bonferroni correction for n=3	U = 79.5, p = 0.085, effect-size (r) = 0.5
Fig. S4B	CS+/baseline decoding accuracies, odor period, Ext2 vs Reacquisition, vCA1	10 decoding iterations for each session	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	Mann-Whitney U, bonferroni correction for n=3	U = 8, p = 0.005, effect-size (r) = 0.71
Fig. S4B	CS+/baseline decoding accuracies, odor period, Early vs Late, dCA1	10 decoding iterations for each session	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	Mann-Whitney U, bonferroni correction for n=3	U = 42.5, p = 1, effect-size (r) = 0.13
Fig. S4B	CS+/baseline decoding accuracies, odor period, Early vs Ext2, dCA1	10 decoding iterations for each session	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	Mann-Whitney U, bonferroni correction for n=3	U = 44.5, p = 1, effect-size (r) = 0.09
Fig. S4B	CS+/baseline decoding accuracies, odor period, Early vs Reacquisition, dCA1	10 decoding iterations for each session	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	Mann-Whitney U, bonferroni correction for n=3	U = 33, p = 0.64, effect-size (r) = 0.29
Fig. S4B	CS+/baseline decoding accuracies, odor period, Late vs Ext2, dCA1	10 decoding iterations for each session	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	Mann-Whitney U, bonferroni correction for n=3	U = 57, p = 1, effect-size (r) = 0.12
Fig. S4B	CS+/baseline decoding accuracies, odor period, Late vs Reacquisition, dCA1	10 decoding iterations for each session	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	Mann-Whitney U, bonferroni correction for n=3	U = 40.5, p = 1, effect-size (r) = 0.16
Fig. S4B	CS+/baseline decoding accuracies, odor period, Ext2 vs Reacquisition, dCA1	10 decoding iterations for each session	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	Mann-Whitney U, bonferroni correction for n=3	U = 31, p = 0.29, effect-size (r) = 0.38
Fig. S4C	CS+/baseline decoding accuracies, trace period, Early vs Late, vCA1	10 decoding iterations for each session	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	Mann-Whitney U, bonferroni correction for n=3	U = 0, p < 0.001, effect-size (r) = 0.85

Figure	Variable	Unit of Comparison	n	Test	Results
Fig. S4C	CS+/baseline decoding accuracies, trace period, Early vs Ext2, vCA1	10 decoding iterations for each session	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	Mann-Whitney U, bonferroni correction for n=3	U = 96, p = 0.002, effect-size (r) = 0.78
Fig. S4C	CS+/baseline decoding accuracies, trace period, Early vs Reacquisition, vCA1	10 decoding iterations for each session	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	Mann-Whitney U, bonferroni correction for n=3	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. S4C	CS+/baseline decoding accuracies, trace period, Late vs Ext2, vCA1	10 decoding iterations for each session	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	Mann-Whitney U, bonferroni correction for n=3	U = 100, p < 0.001, effect-size (r) = 0.85
Fig. S4C	CS+/baseline decoding accuracies, trace period, Late vs Reacquisition, vCA1	10 decoding iterations for each session	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	Mann-Whitney U, bonferroni correction for n=3	U = 46.5, p = 1, effect-size (r) = 0.06
Fig. S4C	CS+/baseline decoding accuracies, trace period, Ext2 vs Reacquisition, vCA1	10 decoding iterations for each session	n-matched pseudopopulation of 454 cells from 11 vCA1 mice	Mann-Whitney U, bonferroni correction for n=3	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. S4C	CS+/baseline decoding accuracies, trace period, Early vs Late, dCA1	10 decoding iterations for each session	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	Mann-Whitney U, bonferroni correction for n=3	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. S4C	CS+/baseline decoding accuracies, trace period, Early vs Ext2, dCA1	10 decoding iterations for each session	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	Mann-Whitney U, bonferroni correction for n=3	U = 39.5, p = 1, effect-size (r) = 0.18
Fig. S4C	CS+/baseline decoding accuracies, trace period, Early vs Reacquisition, dCA1	10 decoding iterations for each session	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	Mann-Whitney U, bonferroni correction for n=3	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. S4C	CS+/baseline decoding accuracies, trace period, Late vs Ext2, dCA1	10 decoding iterations for each session	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	Mann-Whitney U, bonferroni correction for n=3	U = 100, p < 0.001, effect-size (r) = 0.85
Fig. S4C	CS+/baseline decoding accuracies, trace period, Late vs Reacquisition, dCA1	10 decoding iterations for each session	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	Mann-Whitney U, bonferroni correction for n=3	U = 66, p = 0.72, effect-size (r) = 0.27
Fig. S4C	CS+/baseline decoding accuracies, trace period, Ext2 vs Reacquisition, dCA1	10 decoding iterations for each session	n-matched pseudopopulation of 454 cells from 4 dCA1 mice	Mann-Whitney U, bonferroni correction for n=3	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. S5A	vCA1 vs dCA1, Late session, CS+ trials	Mean population activity during even trials (normalized to odd trial peak amplitude), 2-4 sec before/after time of odd trial peak	16 time bins	Mann-Whitney U	U = 210, p = 0.002, effect-size (r) = 0.55
Fig. S5B	vCA1 vs dCA1, Reacquisition session, CS+ trials	Mean population activity during even trials (normalized to odd trial peak amplitude), 2-4 sec before/after time of odd trial peak	16 time bins	Mann-Whitney U	U = 199, p = 0.008, effect-size (r) = 0.47
Fig. S6B	CS+/CS- vs CS1+/CS2+, baseline period, Late session (vCA1)	Euclidean distance between MDS values	10 MDS runs	Mann-Whitney U, bonferroni correction for n=2	U = 37, p = 0.69, effect-size (r) = 0.22
Fig. S6B	CS+/CS- vs CS3-/CS4-, baseline period, Late session (vCA1)	Euclidean distance between MDS values	10 MDS runs	Mann-Whitney U, bonferroni correction for n=2	U = 52, p = 1, effect-size (r) = 0.03
Fig. S6B	CS1+/CS2+ vs CS3-/CS4-, baseline period, Late session (vCA1)	Euclidean distance between MDS values	10 MDS runs	Mann-Whitney U, bonferroni correction for n=2	U = 62, p = 0.77, effect-size (r) = 0.2
Fig. S6B	CS+/CS- vs CS1+/CS2+, odor period, Late session (vCA1)	Euclidean distance between MDS values	10 MDS runs	Mann-Whitney U, bonferroni correction for n=2	U = 99, p < 0.001, effect-size (r) = 0.83
Fig. S6B	CS+/CS- vs CS3-/CS4-, odor period, Late session (vCA1)	Euclidean distance between MDS values	10 MDS runs	Mann-Whitney U, bonferroni correction for n=2	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. S6B	CS1+/CS2+ vs CS3-/CS4-, odor period, Late session (vCA1)	Euclidean distance between MDS values	10 MDS runs	Mann-Whitney U, bonferroni correction for n=2	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. S6B	CS+/CS- vs CS1+/CS2+, trace period, Late session (vCA1)	Euclidean distance between MDS values	10 MDS runs	Mann-Whitney U, bonferroni correction for n=2	U = 94, p = 0.002, effect-size (r) = 0.74
Fig. S6B	CS+/CS- vs CS3-/CS4-, trace period, Late session (vCA1)	Euclidean distance between MDS values	10 MDS runs	Mann-Whitney U, bonferroni correction for n=2	U = 99, p < 0.001, effect-size (r) = 0.83
Fig. S6B	CS1+/CS2+ vs CS3-/CS4-, trace period, Late session (vCA1)	Euclidean distance between MDS values	10 MDS runs	Mann-Whitney U, bonferroni correction for n=2	U = 75, p = 0.13, effect-size (r) = 0.42
Fig. S6B	CS+/CS- vs CS1+/CS2+, US period, Late session (vCA1)	Euclidean distance between MDS values	10 MDS runs	Mann-Whitney U, bonferroni correction for n=2	U = 77, p = 0.09, effect-size (r) = 0.46
Fig. S6B	CS+/CS- vs CS3-/CS4-, US period, Late session (vCA1)	Euclidean distance between MDS values	10 MDS runs	Mann-Whitney U, bonferroni correction for n=2	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. S6B	CS1+/CS2+ vs CS3-/CS4-, US period, Late session (vCA1)	Euclidean distance between MDS values	10 MDS runs	Mann-Whitney U, bonferroni correction for n=2	U = 93, p = 0.003, effect-size (r) = 0.73

Figure	Variable	Unit of Comparison	n	Test	Results
Fig. S6C	CS1+/CS2+ vs CS3-/CS4-, US period, Late session (dCA1)	Euclidean distance between MDS values	10 MDS runs	Mann-Whitney U, bonferroni correction for n=2	U = 47, p = 1, effect-size (r) = 0.05
Fig. S6C	CS+/CS- vs CS1+/CS2+, baseline period, Late session (dCA1)	Euclidean distance between MDS values	10 MDS runs	Mann-Whitney U, bonferroni correction for n=2	U = 58, p = 1, effect-size (r) = 0.14
Fig. S6C	CS+/CS- vs CS3-/CS4-, baseline period, Late session (dCA1)	Euclidean distance between MDS values	10 MDS runs	Mann-Whitney U, bonferroni correction for n=2	U = 54, p = 1, effect-size (r) = 0.07
Fig. S6C	CS1+/CS2+ vs CS3-/CS4-, baseline period, Late session (dCA1)	Euclidean distance between MDS values	10 MDS runs	Mann-Whitney U, bonferroni correction for n=2	U = 43, p = 1, effect-size (r) = 0.12
Fig. S6C	CS+/CS- vs CS1+/CS2+, odor period, Late session (dCA1)	Euclidean distance between MDS values	10 MDS runs	Mann-Whitney U, bonferroni correction for n=2	U = 99, p < 0.001, effect-size (r) = 0.83
Fig. S6C	CS+/CS- vs CS3-/CS4-, odor period, Late session (dCA1)	Euclidean distance between MDS values	10 MDS runs	Mann-Whitney U, bonferroni correction for n=2	U = 77, p = 0.09, effect-size (r) = 0.46
Fig. S6C	CS1+/CS2+ vs CS3-/CS4-, odor period, Late session (dCA1)	Euclidean distance between MDS values	10 MDS runs	Mann-Whitney U, bonferroni correction for n=2	U = 13, p = 0.012, effect-size (r) = 0.63
Fig. S6C	CS+/CS- vs CS1+/CS2+, trace period, Late session (dCA1)	Euclidean distance between MDS values	10 MDS runs	Mann-Whitney U, bonferroni correction for n=2	U = 100, p < 0.001, effect-size (r) = 0.85
Fig. S6C	CS+/CS- vs CS3-/CS4-, trace period, Late session (dCA1)	Euclidean distance between MDS values	10 MDS runs	Mann-Whitney U, bonferroni correction for n=2	U = 100, p < 0.001, effect-size (r) = 0.85
Fig. S6C	CS1+/CS2+ vs CS3-/CS4-, trace period, Late session (dCA1)	Euclidean distance between MDS values	10 MDS runs	Mann-Whitney U, bonferroni correction for n=2	U = 89, p = 0.007, effect-size (r) = 0.66
Fig. S6C	CS+/CS- vs CS1+/CS2+, US period, Late session (dCA1)	Euclidean distance between MDS values	10 MDS runs	Mann-Whitney U, bonferroni correction for n=2	U = 100, p < 0.001, effect-size (r) = 0.85
Fig. S6C	CS+/CS- vs CS3-/CS4-, US period, Late session (dCA1)	Euclidean distance between MDS values	10 MDS runs	Mann-Whitney U, bonferroni correction for n=2	U = 100, p < 0.001, effect-size (r) = 0.85
Fig. S6C	CS1+/CS2+ vs CS3-/CS4-, US period, Late session (dCA1)	Euclidean distance between MDS values	10 MDS runs	Mann-Whitney U, bonferroni correction for n=2	U = 47, p = 1, effect-size (r) = 0.05
Fig. S7B	CS+Shock/CS- decoding accuracy, odor period, Early vs Late (vCA1)	10 decoding iterations for each session	n-matched pseudopopulation of 444 cells from 10 vCA1 mice	Mann-Whitney U	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. S7B	CS+Shock/CS- decoding accuracy, odor period, Early vs Late (dCA1)	10 decoding iterations for each session	n-matched pseudopopulation of 444 cells from 3 dCA1 mice	Mann-Whitney U	U = 49.5, p = 1, effect-size (r) = 0.008
Fig. S7B	CS+Shock/CS- decoding accuracy, trace period, Early vs Late (vCA1)	10 decoding iterations for each session	n-matched pseudopopulation of 444 cells from 10 vCA1 mice	Mann-Whitney U	U = 9, p = 0.002, effect-size (r) = 0.69
Fig. S7B	CS+Shock/CS- decoding accuracy, trace period, Early vs Late (dCA1)	10 decoding iterations for each session	n-matched pseudopopulation of 444 cells from 3 dCA1 mice	Mann-Whitney U	U = 12, p = 0.005, effect-size (r) = 0.64
Fig. S7C	CS+Rew/CS- decoding accuracy, odor period, Early vs Late (vCA1)	10 decoding iterations for each session	n-matched pseudopopulation of 444 cells from 10 vCA1 mice	Mann-Whitney U	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. S7C	CS+Rew/CS- decoding accuracy, odor period, Early vs Late (dCA1)	10 decoding iterations for each session	n-matched pseudopopulation of 444 cells from 3 dCA1 mice	Mann-Whitney U	U = 0, p < 0.001, effect-size (r) = 0.77
Fig. S7C	CS+Rew/CS- decoding accuracy, trace period, Early vs Late (vCA1)	10 decoding iterations for each session	n-matched pseudopopulation of 444 cells from 10 vCA1 mice	Mann-Whitney U	U = 11, p = 0.004, effect-size (r) = 0.66
Fig. S7C	CS+Rew/CS- decoding accuracy, trace period, Early vs Late (dCA1)	10 decoding iterations for each session	n-matched pseudopopulation of 444 cells from 3 dCA1 mice	Mann-Whitney U	U = 0, p < 0.001, effect-size (r) = 0.85
Fig. S7G	Odor identity decoding accuracy across reversal learning (Late/Late Reversal), vCA1 vs dCA1	10 decoding iterations for each region	n-matched pseudopopulation of 281 cells from 10 vCA1 and 3 dCA1 mice	Mann-Whitney U	U = 41, p = 0.52, effect-size (r) = 0.15
Fig. S7H	Trial type decoding accuracy across reversal learning, trace period, Rew/CS- accuracy vs Sh/CS- accuracy (vCA1)	10 decoding iterations each	n-matched pseudopopulation of 281 cells from 10 vCA1 mice	Mann-Whitney U	U = 100, p < 0.001, effect-size (r) = 0.85
Fig. S7H	Trial type decoding accuracy across reversal learning, trace period, Rew/CS- accuracy vs Sh/CS- accuracy (dCA1)	10 decoding iterations each	n-matched pseudopopulation of 281 cells from 3 dCA1 mice	Mann-Whitney U	U = 100, p < 0.001, effect-size (r) = 0.85