

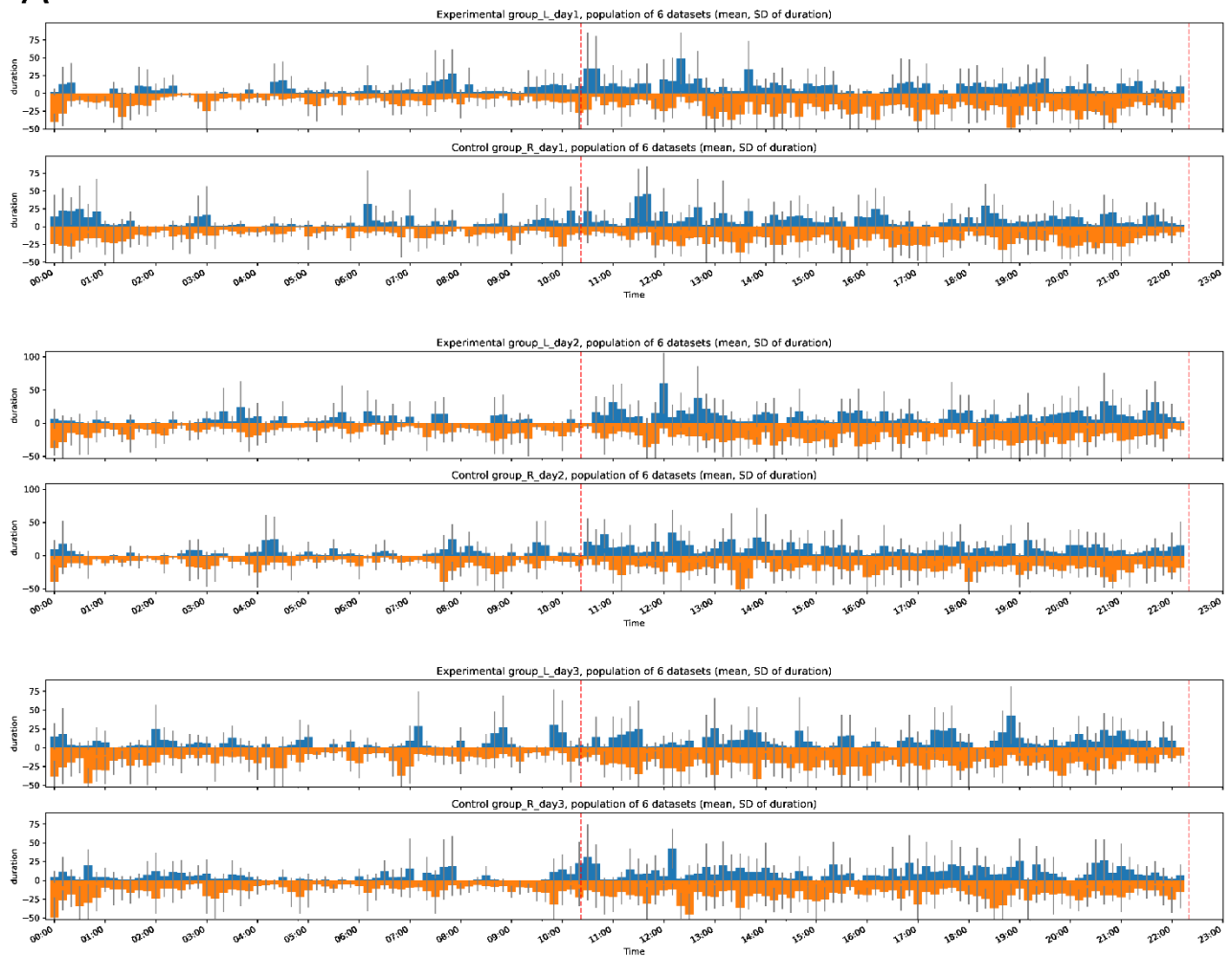
1 **Supplementary Information**

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3 **Fig. S1 Time profiles over three days.** (A) showing similar pictures of duration with mean and
4 SD from all six datasets. (B) showing counts instead of ‘duration’ of grooming and non-grooming
5 episodes of the population (mean, SD of six datasets).

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A



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B

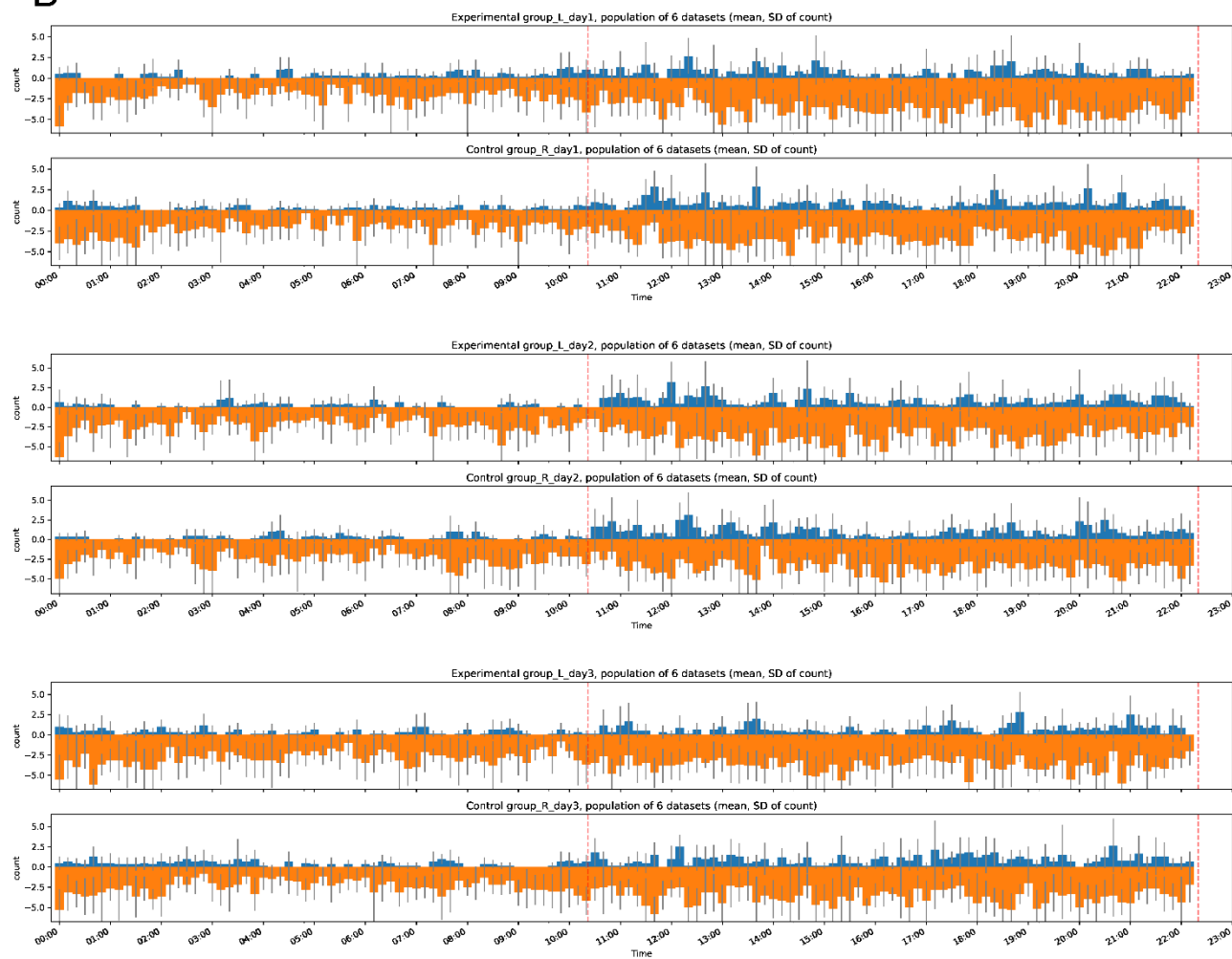
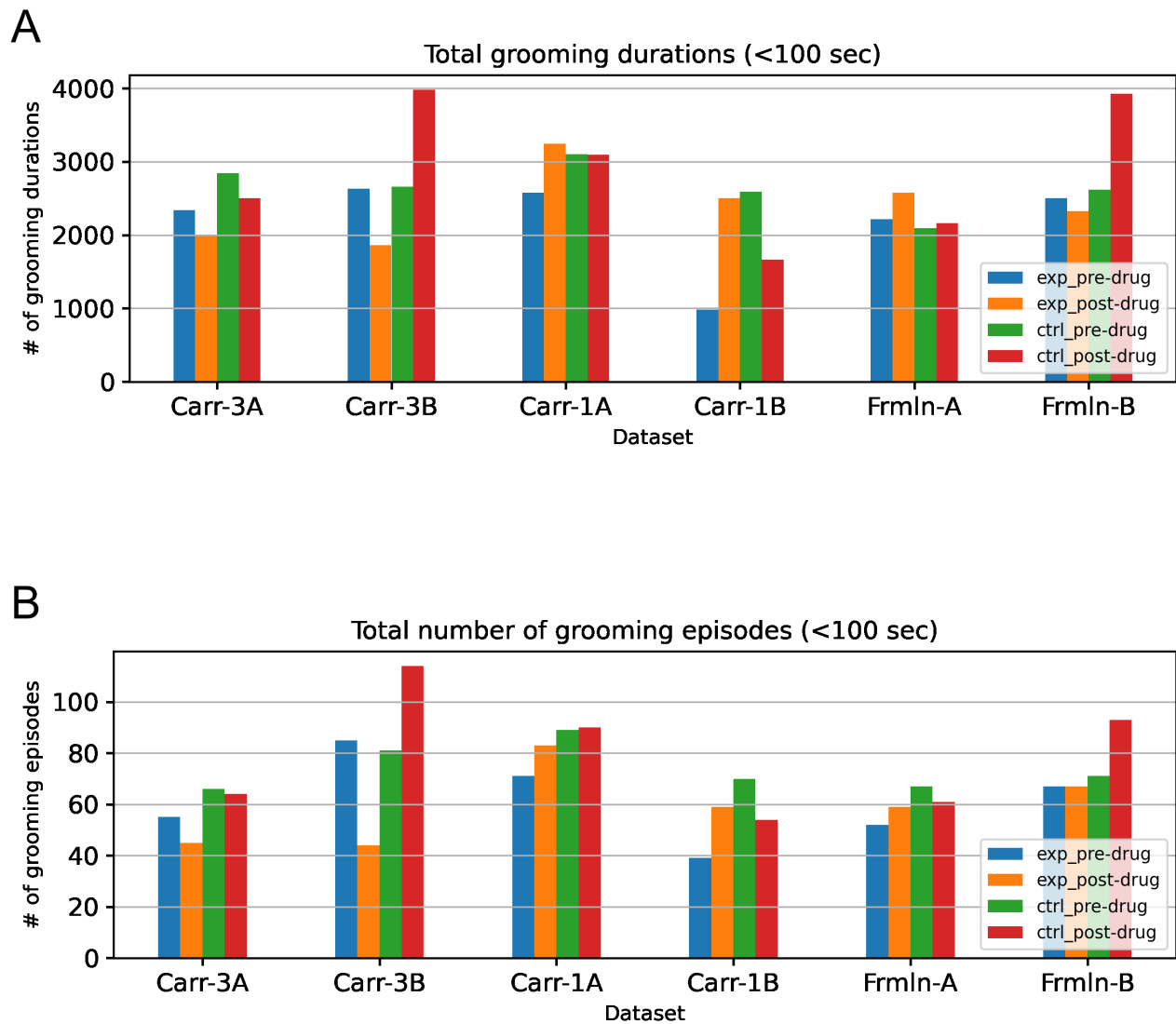
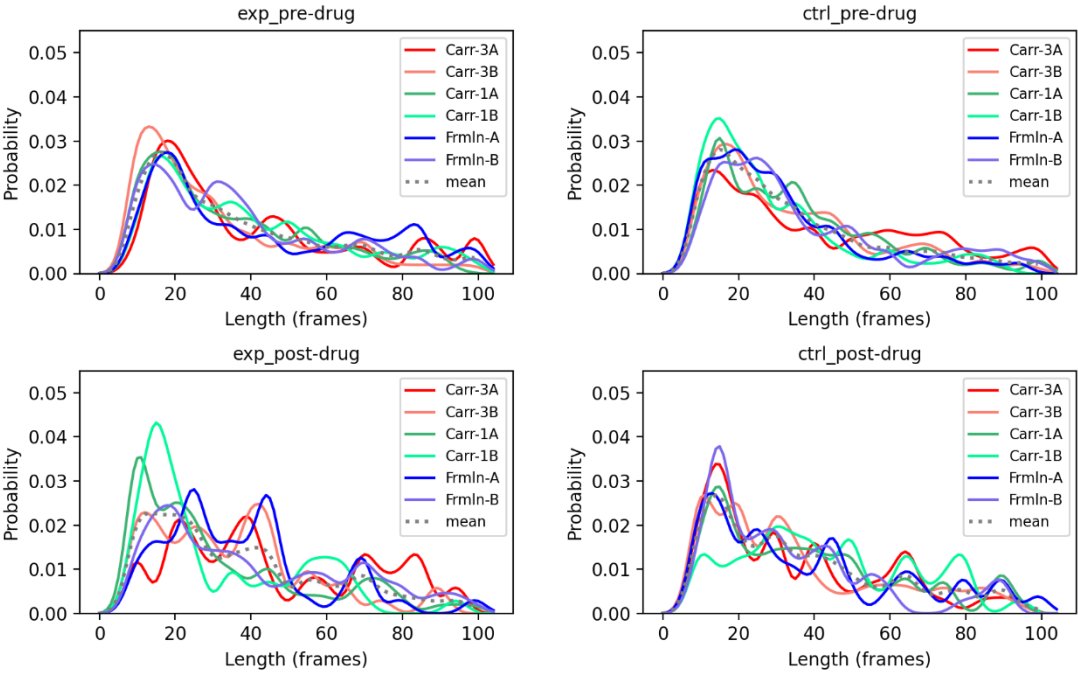


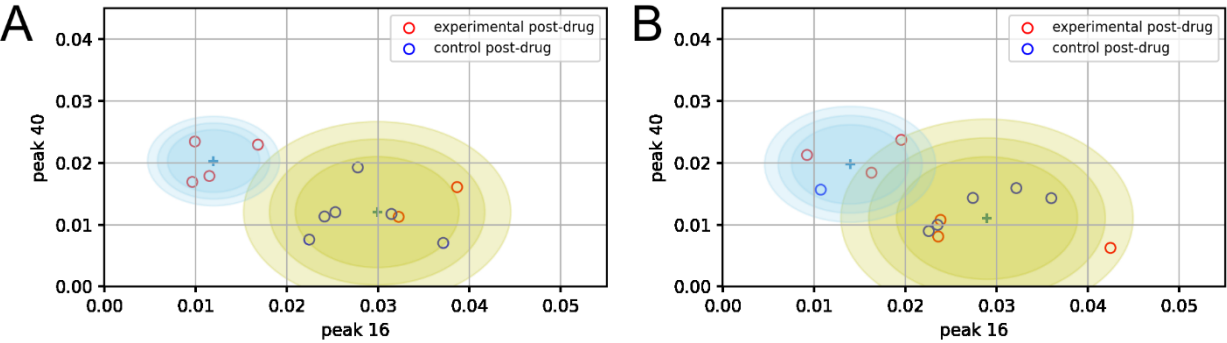
Fig. S2 Comparison of the pre-drug and post-drug conditions in the experimental and control rats. (A) Total grooming durations shown for the pre-drug and post-drug conditions in the experimental and control rats. Wilcoxon signed-rank test showed no difference between pre- and post- drug conditions ($p=0.6$), nor between experimental and control groups ($p=0.6$). **(B)** Total number of grooming episodes shown for the pre-drug and post-drug conditions in experimental and control rats. Wilcoxon signed-rank test again showed no difference between pre- and post- drug conditions ($p=0.89$), nor between experimental and control groups ($p=0.75$).



35 **Fig. S3 Grooming duration PDFs of all six datasets and their mean PDF (same as Fig 13)**
 36 except on model results from dataset-dependent approach, instead of from human-judgment.



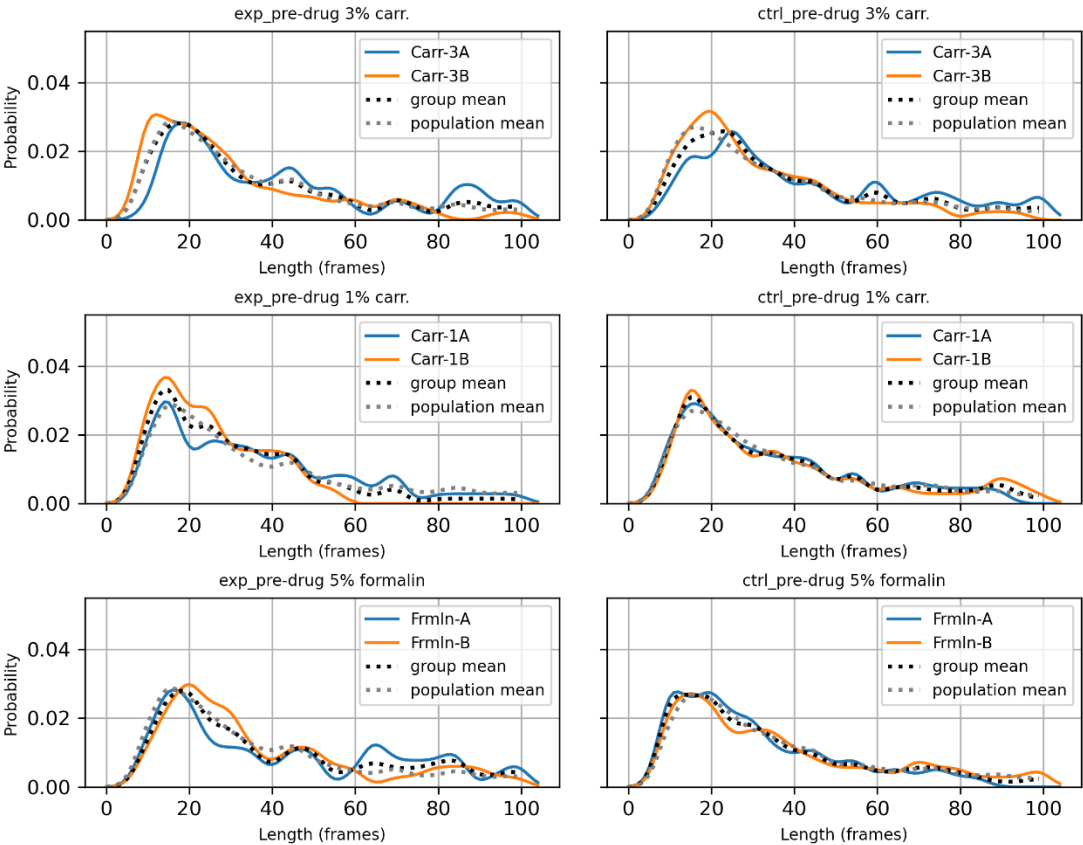
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 39 **Fig. S4 Cluster analysis of the combined data in Figure 13g,h, showing center and 3 SD**
 40 boundaries for two clusters (A). Here, the Silhouette coefficient is 0.579. For comparison, similar
 41 results from the dataset-dependent approach are shown in (B). Here, the Silhouette coefficient is
 42 0.501.



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Fig. S5 PDF profiles in the pre-drug condition of all six groups (different pain inducer protocols). Captions similar to Fig 14. Note similar shapes across groups.



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62 **Table S1 Curve fitting of the average pre-drug grooming duration PDF**, based on five radial
63 basis functions (MSE = 1.025×10^{-6} , $R^2=0.983$). Parameters of the fitted model are:

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k	Weight (w)	Center (c)	Bandwidth (σ)
1	-0.096	41.2	-582.5
2	-0.021	-1.5	-9.7
3	0.047	31.7	-344.5
4	0.052	100.4	-3,458.8
5	0.017	10.5	-37.8

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