

Rearing behavior as indicator of spatial novelty and memory in developing rats

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Extended Figures

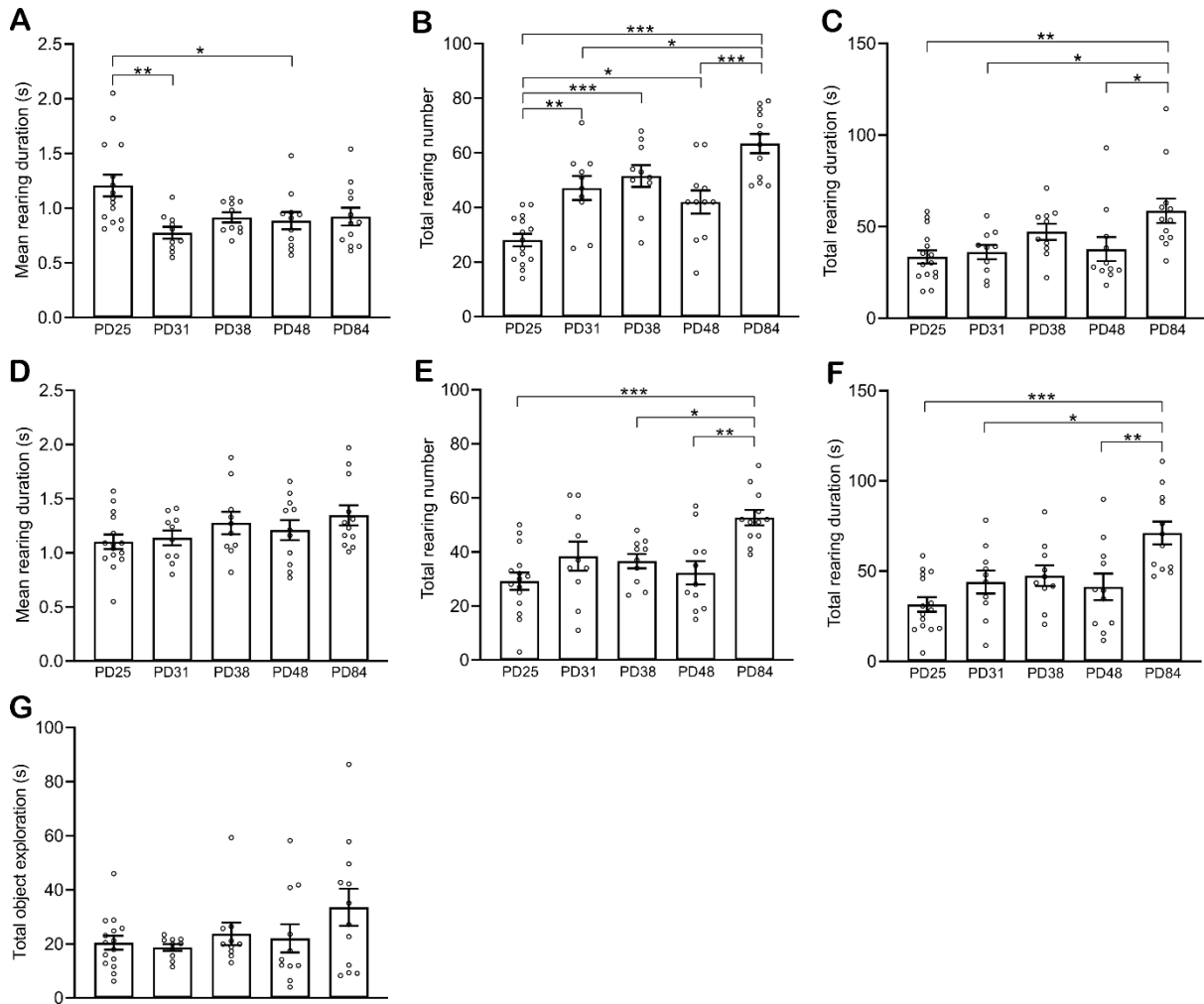


Figure 1-1. Rearing activity and object exploration during the OPR encoding and retrieval phases. (A) Mean rearing duration (s), (B) total rearing number, and (C) total rearing duration (s) in the different age groups (PD25, PD31, PD38, PD48, PD84) for the 5-min OPR encoding phase. (D) Mean rearing duration (s), (E) total rearing number and (F) total rearing duration (s) for the 5-min OPR retrieval phase. (G) total object exploration in the different age groups (PD25, PD31, PD38, PD48, PD84) for the 5-min OPR encoding phase. Data were analysed using one-way ANOVA followed by Tukey's multiple comparisons test. Mean \pm SEM values with overlaid dot plots are shown. *p < 0.05, **p < 0.01, ***p < 0.001.

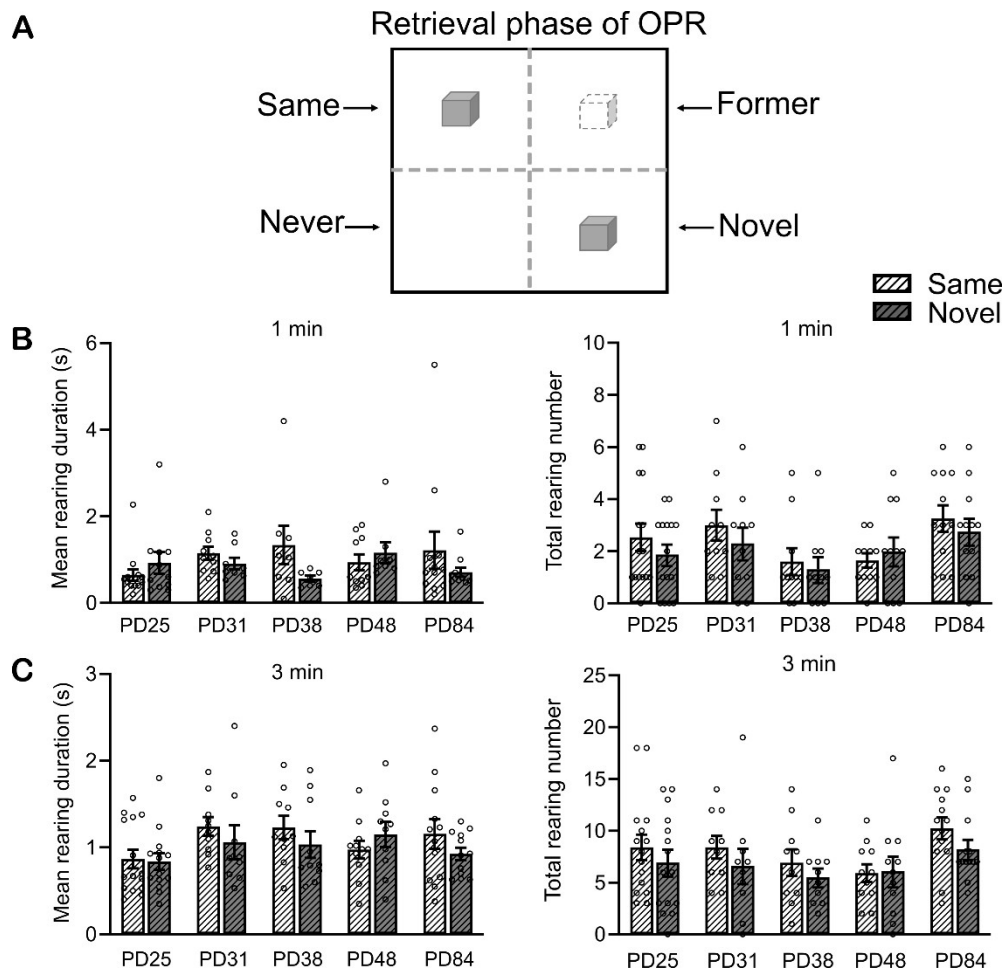


Figure 2-1. Rearing activity in the Same vs Novel zones of the arena. (A) Discrimination of arena zones, see legend to Figure 2A. (B) Mean rearing duration (s) and total rearing number in the Same and Novel zones in the different age groups (PD25, PD31, PD38, PD48, PD84) for the first 1 min and (C) 3 min of the retrieval phase. Mean \pm SEM values with overlaid dot plots are shown.

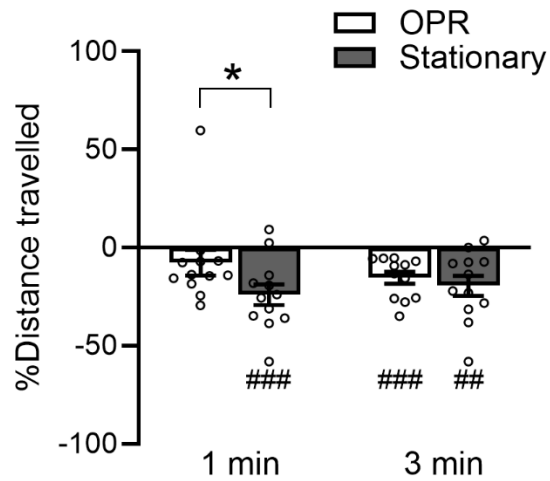


Figure 3-1. Distance travelled (%) at retrieval in OPR and stationary task condition of Experiment 2. The mean \pm SEM distance travelled (%) during the first 1 min and 3 min of the retrieval phase is shown in percent change from levels during encoding (set to 100 %). ## $p < 0.01$, ### $p < 0.001$, for one sample t-test against 0. * $p < 0.05$ for LSD post-hoc pairwise tests.

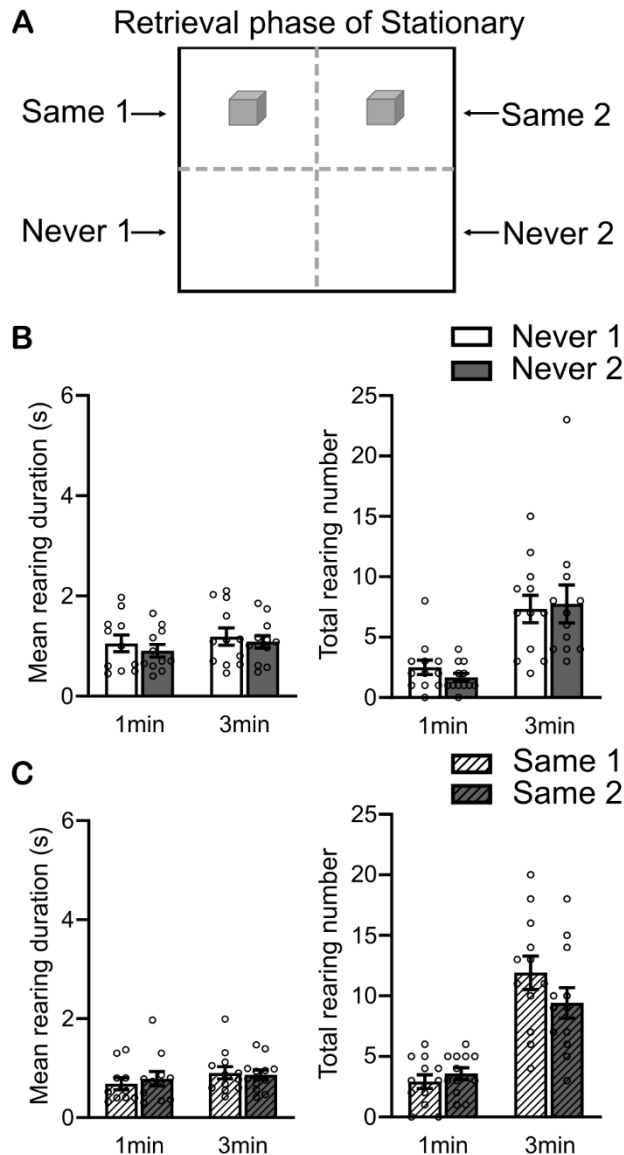
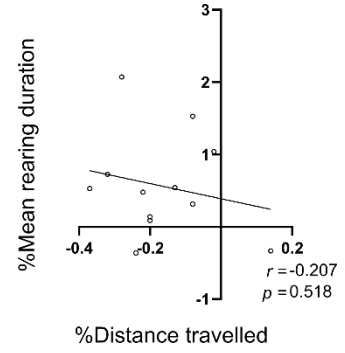
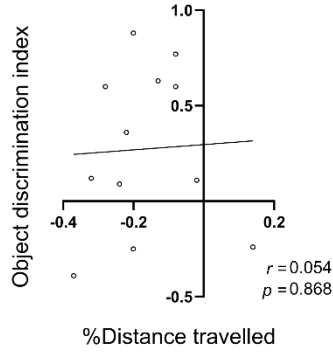
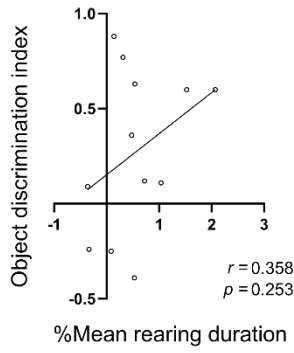
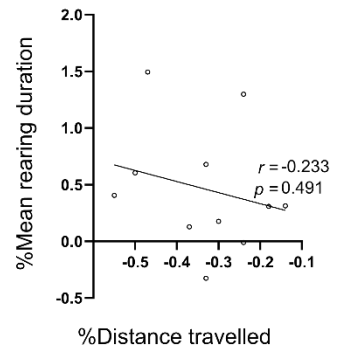
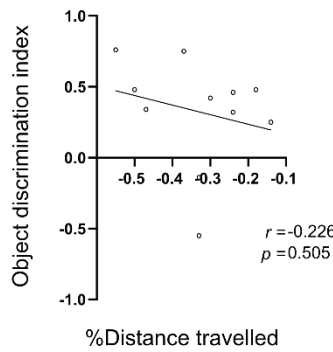
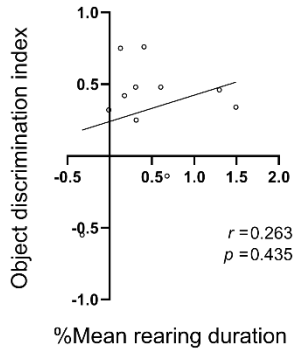


Figure 4-1. Rearing activity in the 4 different zones of the arena during the retrieval phase of the stationary task condition. (A) Corresponding to the analysis of the OPR task the quadrants of the arena were here separated into two kinds of (functionally) different Zones containing an object (Same 1, Same 2) or remaining empty (Never 1, Never 2). (B) Mean rearing duration (s, left) and total rearing number (right) in the two Never and (C) the two Same for the first 1 min and 3 min of the retrieval phase. Mean \pm SEM values with overlaid dot plots are shown. There were no significant differences between any of the conditions.

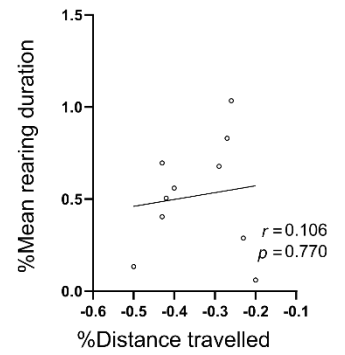
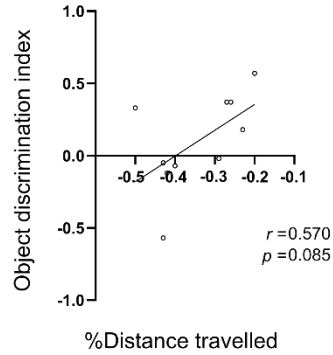
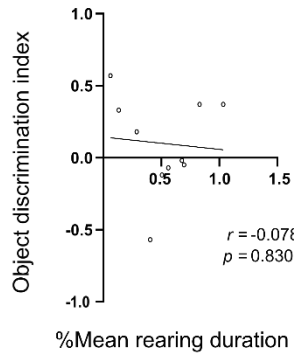
PD 84



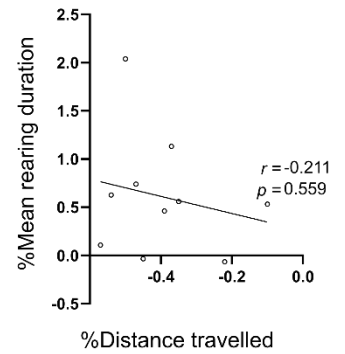
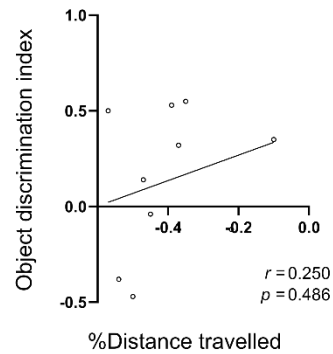
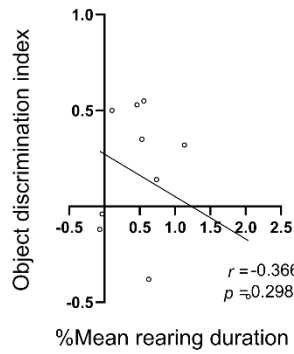
PD 48



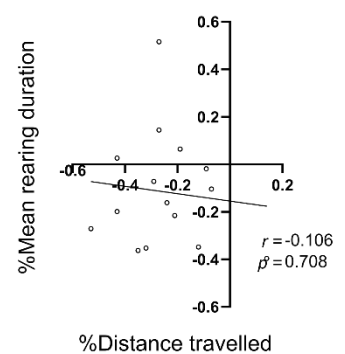
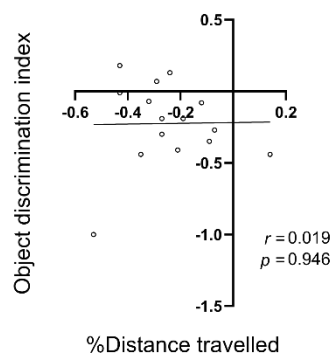
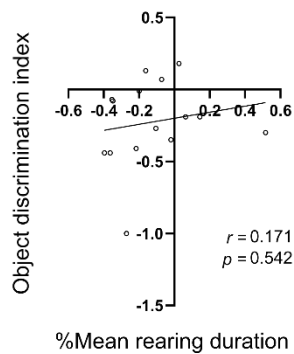
PD 38



PD 31



PD 25



Extended Figure 5-1. Scatter plots showing key correlations between behavioral parameters of spatial novelty detection during the retrieval phase of the OPR task. Left - Correlation between object discrimination index (ODI, y-axes) and %Mean rearing duration and (middle) %Distance travelled. To avoid complexity, the %Total rearing number variable is excluded. Right – Correlation between %Mean rearing duration (y-axis) and %Distance travelled. Pearson correlations are shown separately for each age group. *P < 0.05, **P < 0.01 and ***P < 0.001 level (uncorrected).

Extended Data Table 1| Correlations between ODI, exploratory rearing and distance travelled for minute 3 of OPR task

		%Total rearing number	ODI	%Distance travelled
%Mean rearing duration	PD 84	<i>r</i>	0.273	0.358
		<i>p</i>	0.390	0.253
	PD 48	<i>r</i>	-0.104	0.263
		<i>p</i>	0.762	0.435
	PD 38	<i>r</i>	0.470	-0.078
		<i>p</i>	0.171	0.830
	PD 31	<i>r</i>	-0.029	-0.366
		<i>p</i>	0.936	0.298
	PD 25	<i>r</i>	-0.229	0.171
		<i>p</i>	0.412	0.542
	Average	<i>r</i>	0.085	0.071
		<i>p</i>	0.566	0.630
%Total rearing number	PD 84	<i>r</i>	0.273	0.288
		<i>p</i>	0.391	0.364
	PD 48	<i>r</i>	-0.465	0.508
		<i>p</i>	0.150	0.111
	PD 38	<i>r</i>	0.245	0.617
		<i>p</i>	0.494	0.057
	PD 31	<i>r</i>	-0.115	0.820
		<i>p</i>	0.752	0.004
	PD 25	<i>r</i>	0.437	0.327
		<i>p</i>	0.103	0.234
	Average	<i>r</i>	0.076	0.547
		<i>p</i>	0.684	0.017
ODI	PD 84	<i>r</i>		0.054
		<i>p</i>		0.868
	PD 48	<i>r</i>		-0.226
		<i>p</i>		0.505
	PD 38	<i>r</i>		0.570
		<i>p</i>		0.085
	PD 31	<i>r</i>		0.250
		<i>p</i>		0.486
	PD 25	<i>r</i>		0.019
		<i>p</i>		0.946
	Average	<i>r</i>		0.148
		<i>p</i>		0.366

Extended Table 1. Summary of correlations between the %Mean rearing duration, %Total rearing number, object discrimination index (ODI), and %Distance travelled for the first 3-min period of the OPR test phase. Since Kolmogorov-Smirnov tests did not support non-normality of any of the distributions, Pearson's correlation coefficients and respective p-values are indicated in bold (uncorrected). Bottom lines indicate mean correlation coefficients across age groups; p-values, here, refer to one sided t-tests (against zero) to test systematic shifts towards negative or positive correlation coefficients across age groups (mean correlations and t-tests were calculated on Fisher z-transformed coefficients).