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*Supplementary Materials for*

# Spontaneous orienting of untrained companion dogs naïve to human epilepsy toward odor samples from an unfamiliar human in a controlled non-social paradigm: a proof-of-concept

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## SUPPLEMENTARY DOC 1. Subsample of dogs (n=24)

Results for all other behavioral variables in the subsample of dogs (n=24) were consistent with those observed in the full sample. Specifically, within this subsample no significant differences were detected among the ictal (A), interictal (B), and control (C) stations for sniffing duration (Friedman test $\chi^2$=0.878, p=0.645) or sniffing frequency (Friedman test $\chi^2$=2.426, p=0.297). Strong positive correlations between sniffing duration and frequency were observed across all conditions (ictal A: Spearman's ρ=0.77, p<0.001; interictal B: ρ=0.75, p=0.001; control C: ρ=0.74, p=0.001), confirming the robustness of this association under standardized sniffing conditions and its consistency with the full-sample findings. The proportion of dogs that failed to investigate each station was comparable across odor conditions (ictal: 5/24; interictal: 3/24; control: 6/24), with no evidence of selective non-investigation of the ictal station (Cochran's Q=1.17; Monte Carlo p=0.675). In contrast to the full sample, in which the distribution of sniffing order for the ictal station significantly deviated from chance, station A in the subsample did not show a significant deviation from a random distribution ($\chi^2$=5.67; Monte Carlo p=0.144). Nevertheless, inspection of residuals (Observed - Expected) indicated a tendency for station A to be sniffed first more often than expected (11 *vs* 6; residual =+5.0). For station B, the sniffing-order distribution significantly deviated from chance ($\chi^2$=8.33; Monte Carlo p=0.044), primarily driven by an overrepresentation of second-position investigations (10 *vs* 6; residual =+4.0) and an underrepresentation of third-position investigations (2 *vs* 6; residual =−4.0). For station C, sniffing order was consistent with a random distribution ($\chi^2$=1.33; Monte Carlo p=0.753), with residuals remaining small across categories (range −2.0 to +2.0), confirming the absence of a structured positional bias.

Latency to first sniff did not differ significantly depending on which station was approached first (Kruskal-Wallis test: H=2.61, p=0.271). Median latencies were 10.0 sec for the ictal station (A), 5.0 sec for the interictal station (B), and 25.5 sec for the control station (C). These distributional characteristics confirm substantial inter-individual variability across conditions, consistent with the full sample results. Latency was subsequently dichotomized using the subsample median (10.0 s) and analyzed in relation to the first station approached. The overall association between first choice and latency category was not statistically significant ($\chi^2$=3.29; Monte Carlo p=0.250). Nevertheless, the descriptive pattern closely mirrored that observed in the full sample. Among dogs that approached the ictal station first (A, n=11), short and long latencies were relatively balanced (54.5% *vs* 45.5%), indicating heterogeneous initiation of exploration. Dogs approaching the interictal station first (B, n=9) predominantly exhibited short latencies (77.8%), reflecting rapid exploratory onset. In contrast, dogs that first approached the control station (C, n=4) more frequently showed long latencies (75.0%), suggesting delayed initiation of exploration.

**Supplementary Table 1**
Station-specific structuring of object sniffing strategies (n=24)

| Station | Object variable category | Observed (n) | Expected (n) | Residuals | $\chi^2$ (df) | Monte Carlo p |
|---|---|---|---|---|---|---|
| **A** | P | 2 | 4.5 | −2.5 | | |
| | B | 1 | 4.5 | −3.5 | | |
| | PB | 3 | 4.5 | −1.5 | | |
| | BP | 12 | 4.5 | +7.5 | 17.11 (3) | 0.001 |
| | **Total (N)** | **18** | | | | |
| **B** | P | 1 | 4.8 | −3.8 | | |
| | B | 2 | 4.8 | −2.8 | | |
| | PB | 4 | 4.8 | −0.8 | | |
| | BP | 12 | 4.8 | +7.3 | 15.74 (3) | 0.002 |
| | **Total (N)** | **19** | | | | |
| **C** | B | 5 | 4.7 | +0.3 | | |
| | PB | 3 | 4.7 | −1.7 | | |
| | BP | 6 | 4.7 | +1.3 | 1.00 (2) | 0.715 |
| | **Total (N)** | **14** | | | | |

Station A: ictal; station B: interictal; station C: empty (control).
Object variable category coding: P (pot only); B (bowl only); PB (both, pot first); BP (both, bowl first). P: Monte Carlo-estimated p-value. Only dogs that investigated the station were included in the Object analysis.