

Supplementary Material

Accompanying the article:

Rogalla MM, Rauser I, Schulze K, Osterhagen L, Hildebrandt KJ. Mice tune out not in: Violation of prediction drives auditory saliency, *Proceedings of the Royal Society B: Biological Sciences*, doi: 10.1098/rspb. 2019.2001

Supplementary Methods

Handling and training procedure

Upon arrival from the local animal facility at the age of 9 to 12 weeks, each animal was kept for at least two days without handling and food deprivation to habituate to the novel situation of single-housing, cage enrichment and inverted light:dark cycle. Mice underwent a strict handling protocol prior to experiments, performed for one week twice per day for at least 15 minutes to reduce avoidance behaviour (supplementary fig. S1A). After deprivation, animals were habituated to the experimental setup in silence and darkness twice per day for four times (2 x 10, 1 x 15, 1 x 20 min), provided with pellets placed in the feeder bowl.

Auditory training in the corresponding experiment (for stimulus details, see last paragraph of each experiment description) was conducted twice per day with a minimum of 1.5 h in between, introduced with relatively short waiting times (0.2-0.7 sec). The waiting time was gradually increased until a stable performance at waiting times between 1.25 and 5.25 s were observed in several consecutive sessions, which usually lasted 5-15 sessions (supplementary fig. S1B). Training sessions did not contain sham trials. A training session was terminated after 30 minutes or 40 received rewards.

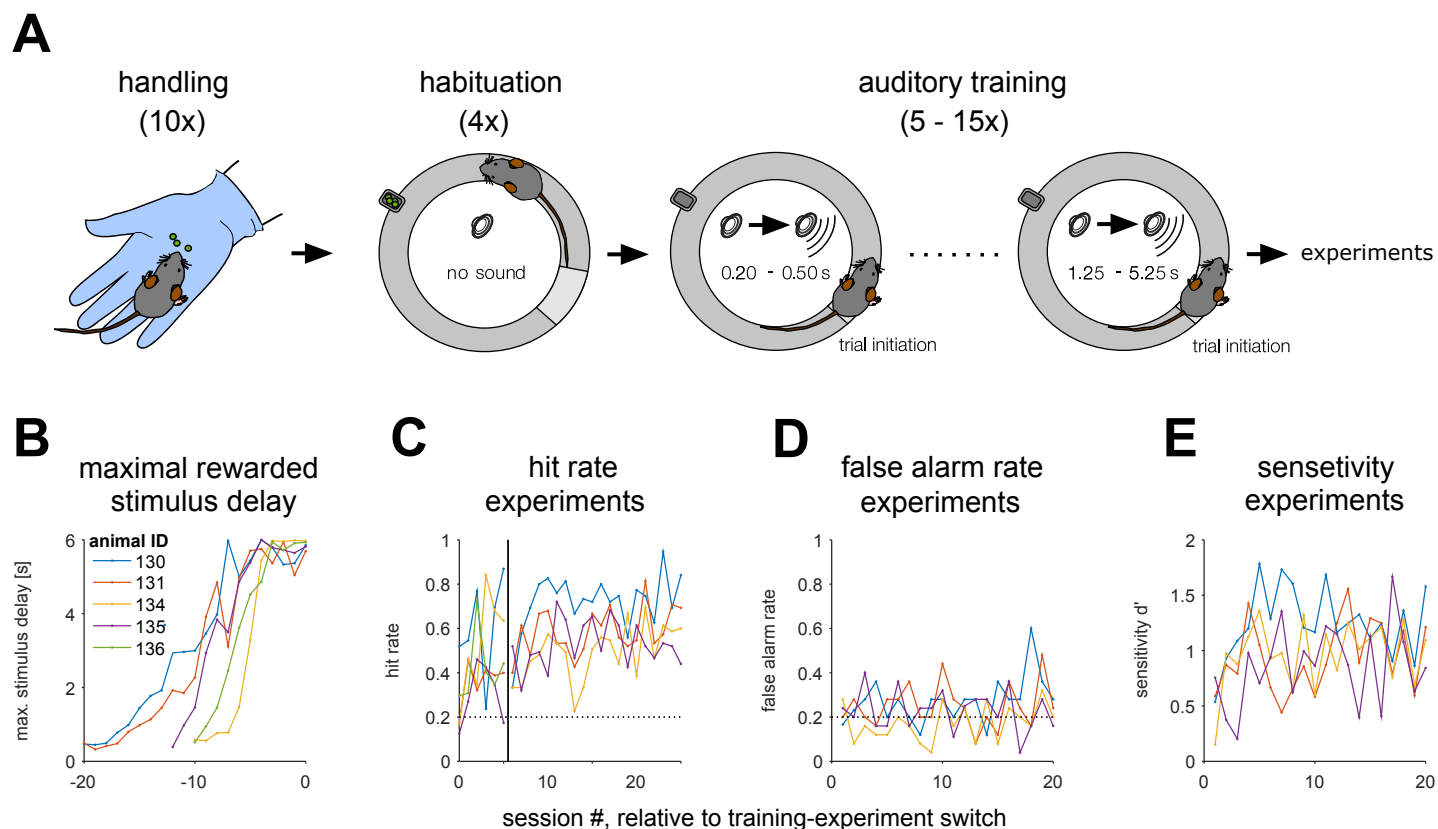


Figure S1: Training procedure. A: Handling, habituation, and auditory training. Prior to the habituation, the deprived animals underwent a handling procedure during which pellets were provided twice per day for one week. This was followed by the habituation to the setup in darkness and silence (four times). During habituation, pellets were provided in the feeder bowl. Auditory training was introduced with relatively short waiting times (0.2 – 0.5s), so that a simple crossing of the pedestal already caused a stimulus presentation and a reward. Waiting times were increased (1.25 – 5.25s) until a stable performance could be observed for several consecutive sessions. **B: Maximal rewarded stimulus delay.** The maximal stimulus delay for which the animal obtained a reward for each session relative to training–experiment switch for a subset of animals (one batch from Experiment 3). **C: Hit rate experiments.** The number of correct responses to the target (hits) divided by the total number of presented targets is shown for the same subset of animals. The hit rates are plotted for each session relative to training–experiment switch symbolised as vertical black line. The horizontal dashed line gives the estimated chance level of correct responses (0.2). Note that during the experiment, targets with differing saliency were presented. Here, we plot mean hit rate for all stimuli, including those that may have been sub-threshold. Performance for the most salient stimuli only may have much better than the average displayed here. **D: false alarm rates experiments.** The number of responded sham trials (false alarms) divided by the total number of sham trials is shown. The rates are plotted for each session relative to training–experiment switch. **E: sensitivity experiments.** The sensitivity d' is shown for each session relative to training–experiment switch (combining hit rates and d -primes from panels C and D).