

Video Article

Hyponeophagia as a measure of anxiety in the mouse

Robert Deacon¹

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Correspondence to: Robert Deacon at Robert.deacon@psy.ox.ac.uk

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Abstract

Before the present day, when fast-acting and potent rodenticides such as alpha-chloralose were not yet in use, the work of pest controllers was often hampered by a phenomenon known as bait shyness. Mice and rats cannot vomit, so to overcome the problem of potential food toxicity they have evolved a strategy of first ingesting only very small amounts of novel substances. The amounts ingested then gradually increase until the animal has determined whether the substance is safe and nutritious. So the old rat-catchers would first put a palatable substance such as oatmeal, which was to be the vehicle for the toxin, in the infested area. Only when large amounts were being readily consumed would they then add the poison, in amounts calculated not to affect the taste of the vehicle. The poisoned bait, which the animals were now readily eating in large amounts, would then swiftly perform its function. Bait shyness is now used in the behavioural laboratory as a way of measuring anxiety. A highly palatable but novel substance, such as sweet corn, nuts or sweetened condensed milk, is offered to the mice (or rats) in a novel situation, such as a new cage. The latency to consume a defined amount of the new food is then measured. These latency figures are typically highly variable. We have found to minimise the occurrence of very long latencies, that if testing is stopped temporarily after a set time period if the animal has not yet eaten, the animals are removed from the test situation. It is then returned back to the home cage for a brief rest while another animal is tested after a set time period, and is subsequently retested again, then rested again, and retested, and this cycle is repeated if necessary until eating finally occurs. This procedure avoids ultra-long latencies and saves the experimenter time. One advantage of hyponeophagia over anxiety tests such as the plus-maze, is that if the results of the first test fail to achieve statistical significance, another test can be run using a different novel test environment and food, repeated testing can be performed, as the type of anxiety being measured is appears to be always the same and not affected qualitatively changed by the previously run tests, unlike in the plus-maze. Repeated measures ANOVA can then be used to assess the test series.

Disclosures

No conflicts of interest declared.