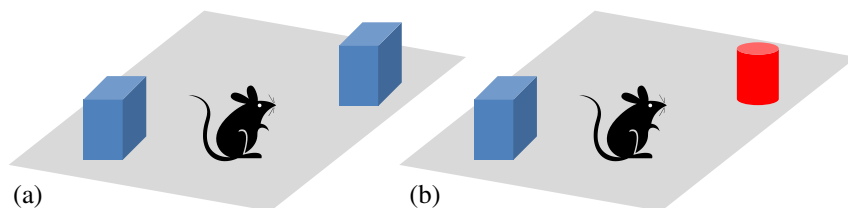


model takes advantage of the natural curiosity of rodents. When placed in the presence of a familiar object and a new object, rodents will spend significantly more time exploring the novel object. This sense of familiarity with the familiar object reflects the animal's ability to remember and recognize objects, providing an opportunity to quantify cognition and memory changes (Figure 7.3).



**FIGURE 7.3** The novel object recognition model takes advantage of the natural curiosity of mice and can be used to determine the impact of candidate compounds on memory and learning. (a) Mice are initially familiarized with an environment and two objects. (b) After the acclimation period, one of the known objects is replaced with a new object. Candidate compounds capable of impacting memory formation (positively or negatively) will influence the amount of time a mouse spends examining the novel object relative to the familiar object.

In practice, a rodent is first familiarized with an arena containing two identical objects set at an equal distance from each other. After the rodent has acclimated to the presence of the two known objects, typically 24 h, one of the two objects is replaced by a new object. The time spent with each of the two objects can be quantified to generate a discrimination index that indicates the rodent's preference for the new object. If a rodent's ability to form memories is impaired, it will be less likely to remember the familiar object, leading to a decreased tendency to explore the novel object. Compounds that are capable of improving cognition and memory can be identified using this model in combination with rodents that would normally suffer from cognitive and memory impairment. Animals treated with successful test compounds would show an increased tendency to explore the new object as compared to the untreated control, which would be expressed as a higher discrimination index. Alternatively, this model could also be used to identify compounds that impair cognition and memory function. Compounds that suppress memory and cognition would prevent the rodent from forming a memory of the first object during the acclimation period. When the new object is added, the rodent will show less preference for the new object, leading to a decreased discrimination index.

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Memory function and the impact of novel compounds can also be assessed by taking advantage of Pavlovian responses in rodents.