

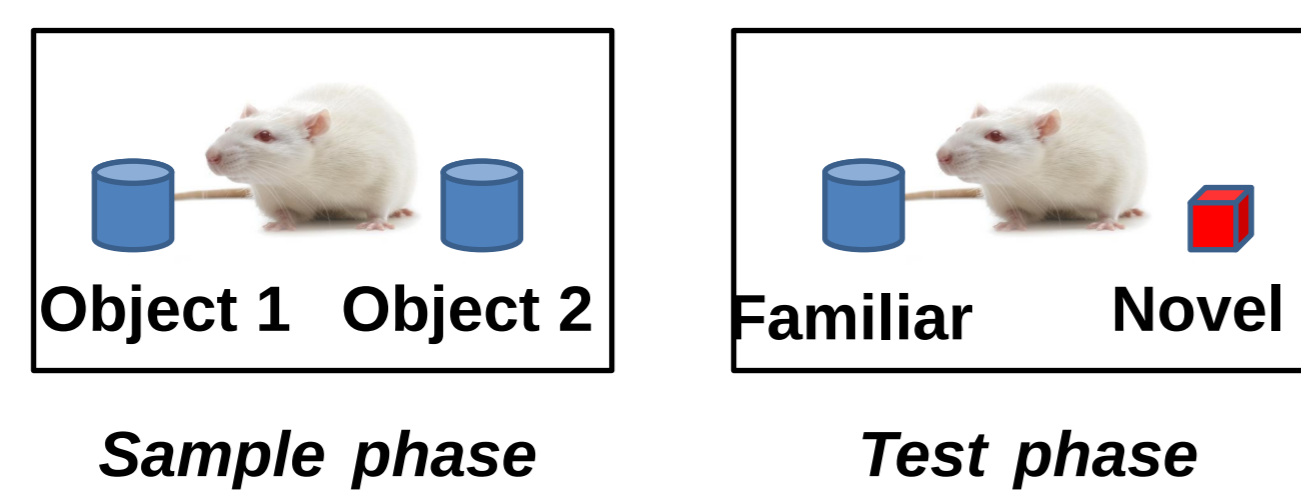
Introduction

An intriguing facet of schizophrenia is sex differences, which have been described for nearly all features. Before testing this gender specificity in rats with schizophrenic phenotype regarding the cognitive functions, we determined the behavioral parameters in two different cognitive tests, comparing recognition (novel object recognition/NOR); reference and working (hole board/HB) memory functions in healthy control rats.

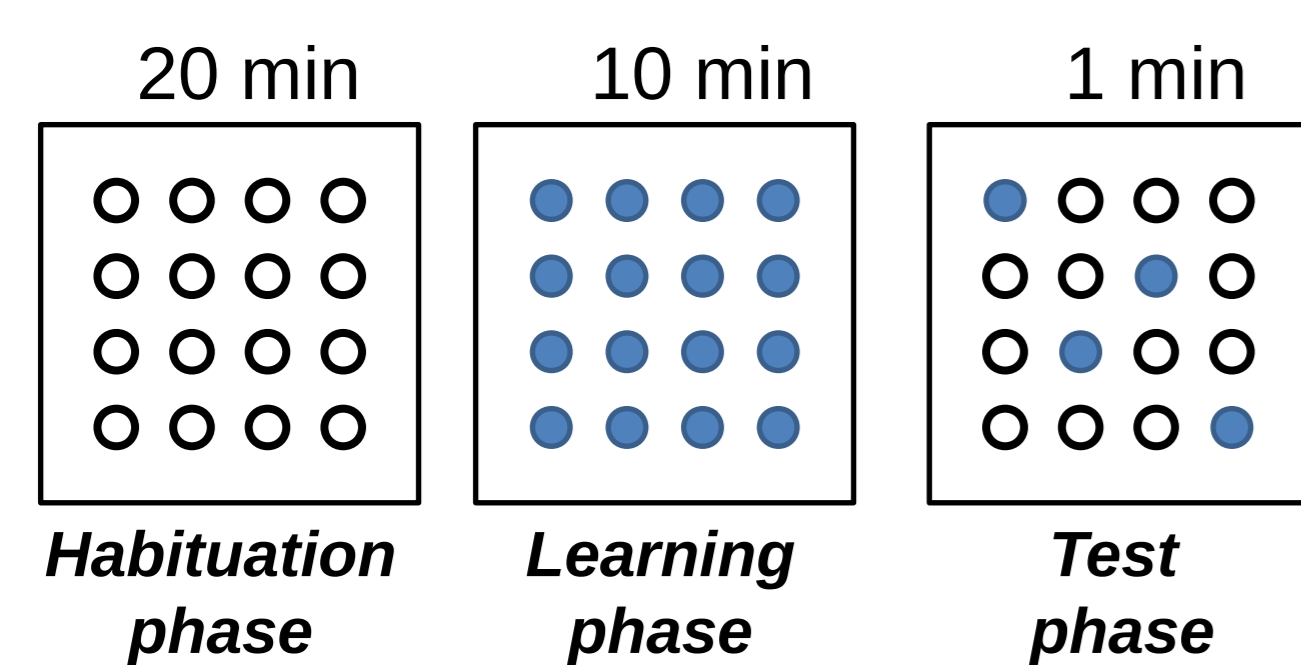
Methods

Behavioral tests were conducted on the same young adult male (n=6) and female (n=10) Wistar rat groups.

The **NOR task** assesses the spontaneous tendency of rodents to spend more time exploring a novel object than a familiar one. During habituation, the animals were allowed to explore an empty arena for 10 min. One minute following the habituation session, the sample phase began where the animals were exposed to two identical objects (5 min). After one hour retention interval a 5-minute test phase was conducted in the presence of a familiar and a novel object. **Recognition memory ratio** was expressed as a differentiation index which is defined as the ratio of time spent exploring the novel object over the total time spent exploring both familiar and novel objects.

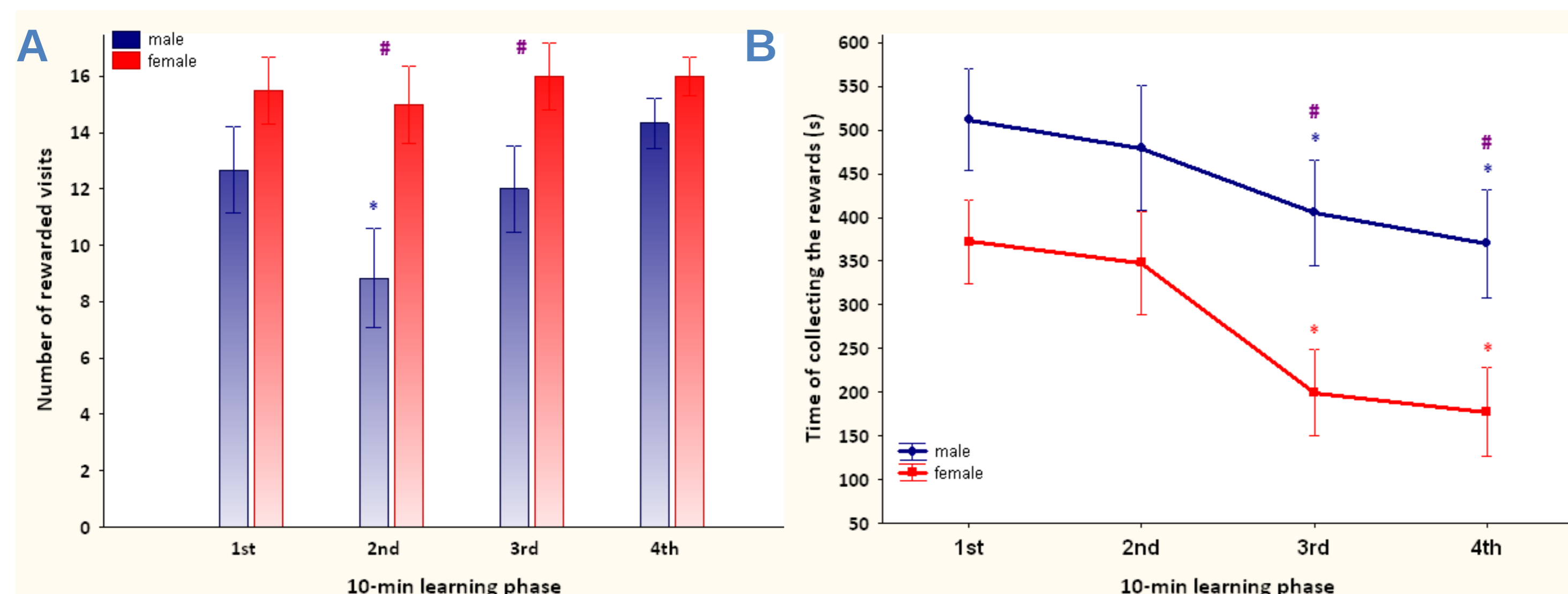


After a habituation and learning phase, the **HB test** was applied to determine the learning capacity of the rats to discriminate baited (puffed rice) from unbaited holes in the open field for a food reward during the test phase. The **reference memory ratio** was defined as the number of visits and revisits to the baited holes divided by the total number of hole visits. The **working memory ratio** was expressed as the number of food-rewarded visits divided by the number of visits and revisits to the baited holes.



Data are expressed as mean±S.E.M.
* significant difference in time
significant difference between the genders

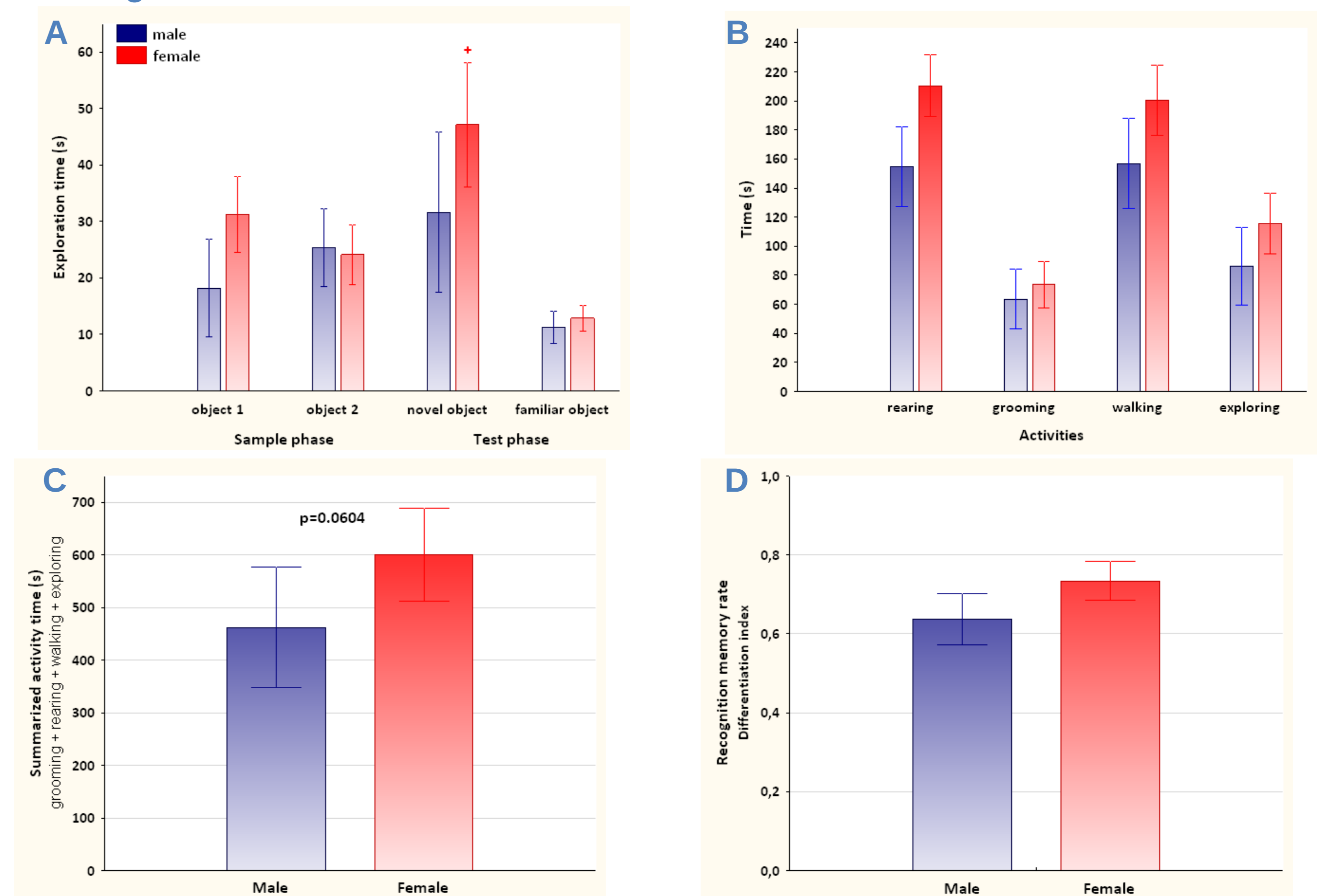
Figure 2.



Results

Regarding the behavioral activity (Figure 1A,B), while female rats spent significantly more time with the novel object exploration (Figure 1A), there was only a tendency (p=0.0604) to a higher summarized activity (Figure 1C) on the **NOR test**. Additionally, there was no significant difference between the genders in the recognition memory rate (Figure 1D).

Figure 1.



In the learning phase of the **HB test** the female rats collected significantly more rewards (Figure 2A) during a shorter period (Figure 2B) compared to male rats. In case of the test phase this gender difference remained significant (Figure 3A,B). The reference and working memory ratio (Figure 4A,B) showed significant differences between the genders, however, the learning profile was almost similar.

Figure 3.

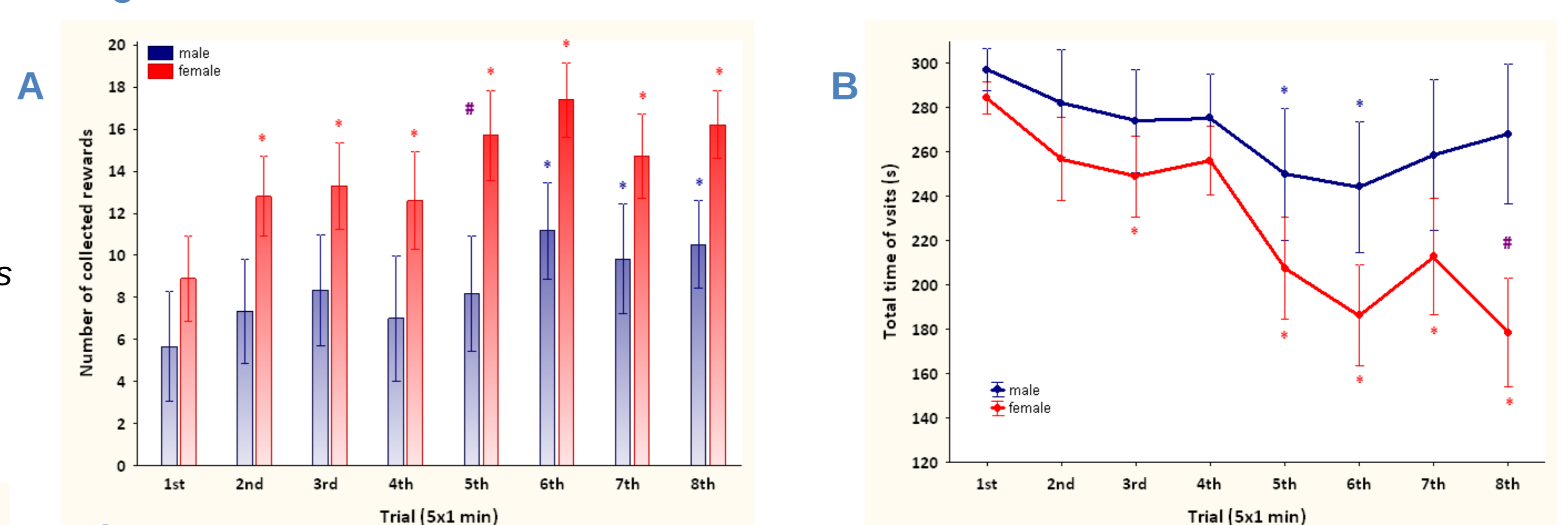
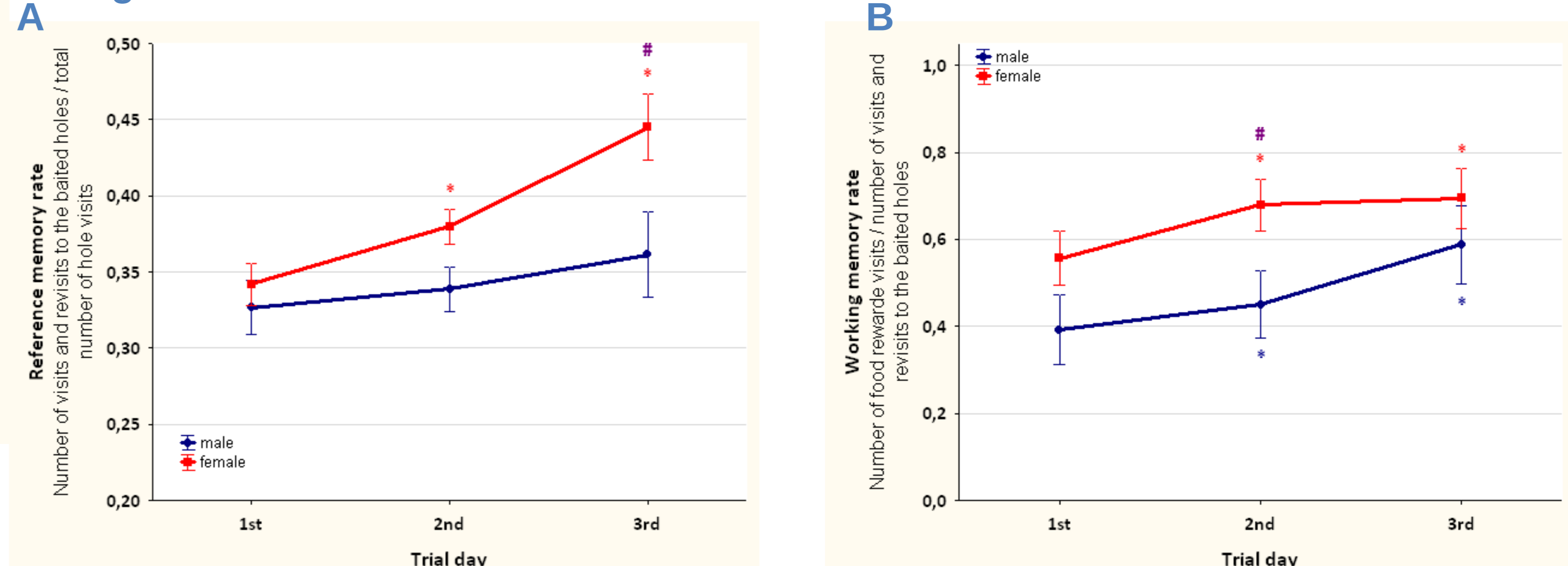


Figure 4.



These results showed enhanced memory functions of female rats, which might be partially due to their higher motor activity. We are planning further studies to reveal the gender differences in animals with CNS disorders.

This work was supported by OTKA (K83810;NF72488), TÁMOP-4.2.2/B-10/1-2010-0012, TÁMOP-4.2.2.A-11/1KONV-2012-0052 grants.