

Assessing rat behaviour in a playpen: effects of continued use

AMY BROGDEN

University of Birmingham

Correspondence: A.brogden@bham.ac.uk

Introduction

Rats are highly intelligent animals and it is important to ensure that enrichment remains beneficial to them over time. When first introduced into a playpen, rats typically exhibit high levels of exploratory behaviour. They are motivated to investigate novel objects and environments using their keen senses to gather information about their surroundings.

However does the set-up remain novel over time? What behaviours do they exhibit and do these change and/or decrease after continued use?

Methodology

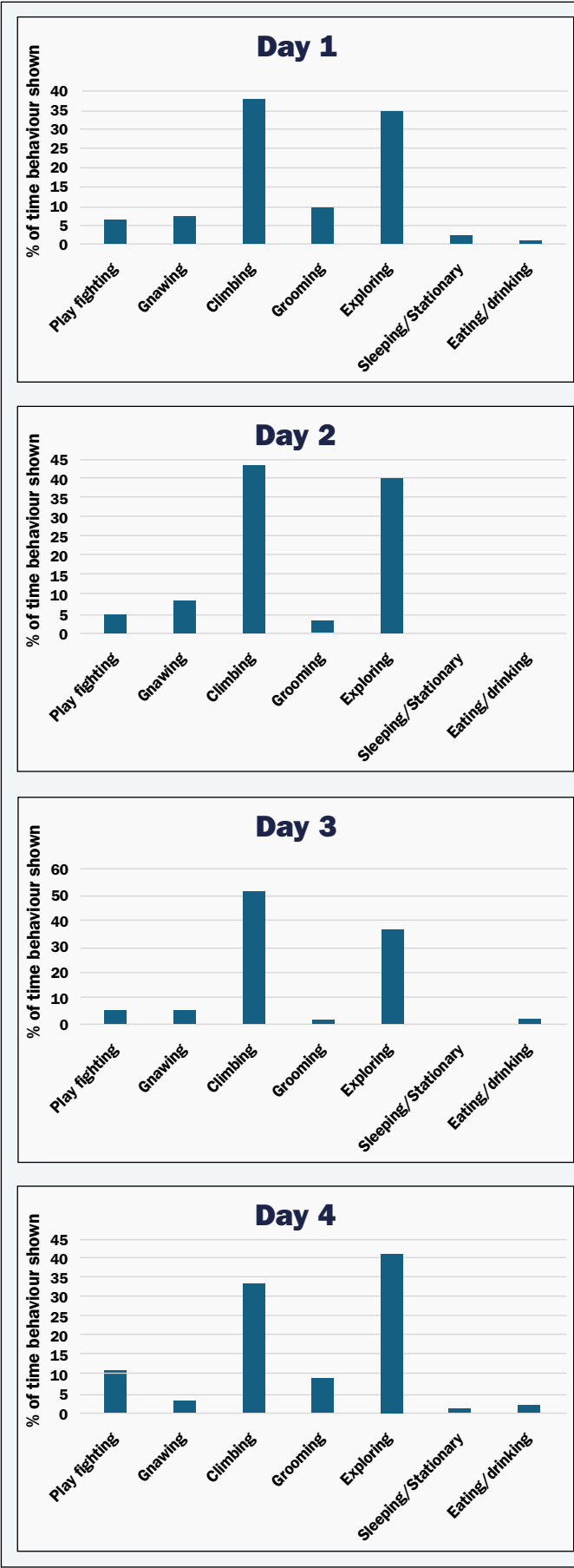
Two groups of 8-week-old male Wistar rats ($n=5$ per group) were observed for 30 minutes at the same time each day over four days. One group remained in their home cage with standard enrichment, while the other group was placed in a playpen. During each observation session, the behaviour exhibited by each rat was recorded at one-minute intervals.

The same two groups of rats were used throughout the study. The home cages contained basic enrichment items such as tunnels and houses. The playpen group had no prior exposure to the environment. According to the National Centre for the Replacement, Refinement and Reduction of Animals in Research (NC3Rs), behavioural indicators of positive welfare in rats include play fighting, gnawing, climbing, grooming and environmental exploration. These behavioural markers were used as a basis for comparing the rats' activities from Day 1 to Day 4 of the observation period.

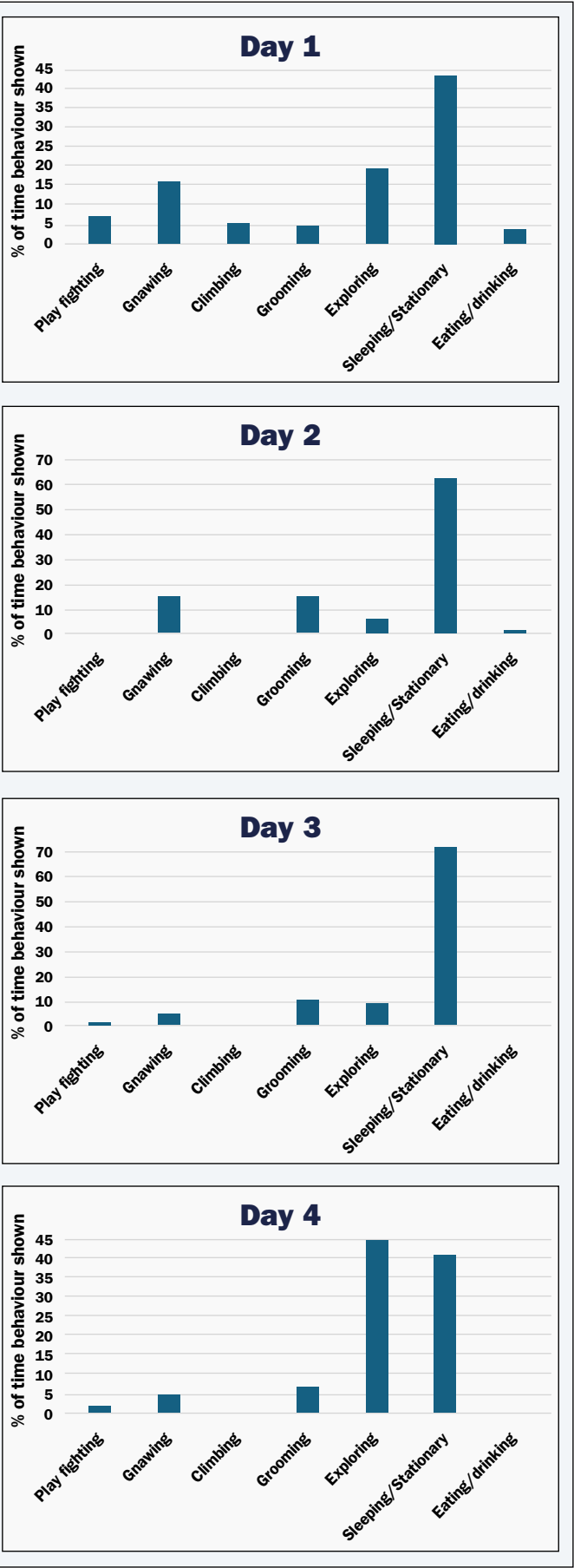


Results

Playpen rats



Control rats



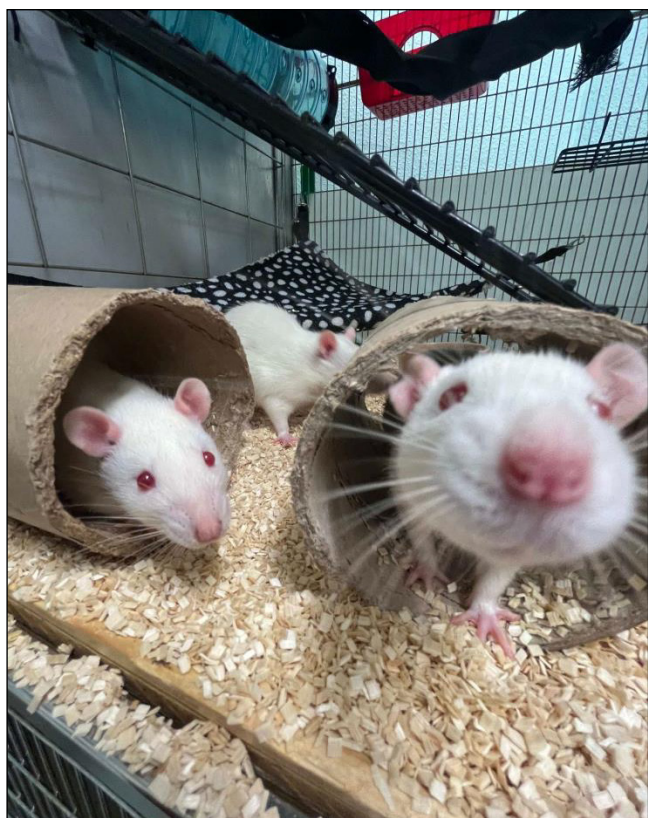
Discussion

Analysis of the observational data revealed a distinct difference in behaviours between the rats in the playpen and the control group. Rats in the playpen environment predominantly exhibited independent exploratory and climbing behaviours. The observations suggest that the home cage serving as the control environment, was less stimulating as evidenced by the control rats' tendency to sleep or remain stationary during observations despite enrichment being provided routinely.

Whilst it is to be expected that the playpen serves as an enriched environment that promotes more active and naturalistic behaviours, we found that throughout the daily observation period the rats in the playpen continued to display more active behaviours compared to the sedentary control rats.

Significantly, there was no difference in the types of behaviours displayed in the playpen from the first to the fourth days of exposure, indicating that the playpen setup maintained its novelty throughout the study period. Had habituation or boredom occurred, we would have anticipated a decrease in the number of exploratory and climbing behaviours displayed by day 4 however this was not observed.

An intriguing finding was the preference of playpen rats for solitary activities such as climbing and exploration rather than social behaviours like playfighting or grooming. This suggests that the rats were prioritising environmental interaction over social engagement.



Conclusion

Collectively, these findings demonstrate the importance of providing an enriched environment that is different to the home cage and that this environment retains novelty over several days. Whilst social interaction is essential for rats, this does not remove the need for provision of a playpen.

