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The behaviour of two sub-species of the striped mouse Rhabdomys: the role of phylogeny and the environment

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Abstract

The role of phylogeny and environmental influences on behaviour were investigated in two sub-species of *Rhabdomys dilectus*: *R. d. chakae* and *R. d. dilectus*. I compared populations of the two sub-species that occur about 70 km apart in superficially similar grasslands, south of Johannesburg (Walkers Fruit Farms) and at Irene in Gauteng Province, South Africa. The vegetation characteristics of the localities were assessed by measuring aerial cover, cover density, amount of dead material, and the maximum and minimum plant height. I studied the maintenance (non-social) and social behaviour of the sub-species in captivity. Three maintenance behaviours were studied: diel activity in an open arena, activity in an enclosed maze and in a modified plus maze. Social behaviour was studied by investigating the stress response of juvenile males after removal from their family groups and being placed in a plus maze, and the tolerance of unfamiliar same-sex consub-specifics in staged dyadic encounters. My results indicate that there were differences in the vegetation at the localities, most notably in the level of cover, which was greater at Irene (*R. d. dilectus*) than at Walkers Fruit Farms (*R. d. chakae*). Both sub-species displayed similar activity profiles (diurnal and crepuscular) and similar levels of activity in an enclosed maze. However, *R. d. dilectus* showed high levels of anxiety in an open arena and in a plus maze. The sub-species showed similar social behaviours: males of both sub-species that were removed from their family groups at the onset of weaning showed a lower stress response compared to the social sister species *R. pumilio.* Social interactions of same-sex intra-sub-specifics were mostly similar between the sub-species but there were slight discrepancies in behaviour associated with mating. Surprisingly, there were higher levels of amicability in all dyads than predicted by the solitary lifestyle of the two sub-species in nature. Behavioural differences (anxiety response) may be due to divergence in allopatry because of differences in vegetation characteristics. The similarities in activity profile and social behaviours could be explained by phylogenetic inertia or by similar selection pressures in similar environments.