

## Where is the free food? Contrafreeloading and food place preference extinction in free-range broiler chickens

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Free-range broiler chickens usually show an uneven utilization of the outdoor range. In this work, we tested whether individual differences in the exploration of the outdoor range is related to different motivation for foraging activity between individuals. For this, we compared chickens with different ranging levels (low- and high-ranging chickens, LRC and HRC, respectively) using a conditioned place preference paradigm to test whether and how individuals differ in contrafreeloading (when individuals work for food instead of acquiring it freely) and during an association/extinction of a learned food place preference. During the contrafreeloading study, chickens ( $n_{LRC} = 13$ ,  $n_{HRC} = 16$ ) were conditioned to one chamber presenting a foraging substrate and mealworms, while in the other chamber mealworms were freely available on the floor. For the food place preference study, individuals ( $n_{LRC} = 19$ ,  $n_{HRC} = 21$ ) were conditioned to one chamber, always presenting a freely accessible food reward (mealworms), while the other chamber was always empty. During testing trials, for both studies, animals had access to both empty chambers, and the time spent in each chamber was quantified. During contrafreeloading tests, HRC showed a marked preference for the foraging substrate + mealworms chamber ( $p = 0.03$ ), whereas LRC did not show any preference ( $p = 0.29$ ). For the first testing day during the food place preference, both HRC and LRC spent significantly more time in the conditioned chamber ( $F_{1, 17} = 13.70$ ,  $p = 0.002$ ), where they could previously find mealworms. During the extinction trials, HRC were also more immobile than LRC ( $3 \pm 1.94$  and  $1.25 \pm 1.75$  for HRC and LRC, respectively,  $U = 20$ ,  $p = 0.048$ ). Our results suggest that individual chickens may value foraging opportunities differently, with LRC being less prone to contrafreeload and being more resistant to the extinction of a learned food place preference, partially explaining their motivation to remain near the barn where free food is available constantly and predictably.



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