The Old School, Brewhouse Hill, Wheathampstead,
Hertfordshire AL4 8AN, UK

Animal Welfare 2011, 20: 469-481
ISSN 0962-7286

Too hungry to learn? Hungry broiler breeders fail to learn a Y-maze food quantity discrimination task

LA Buckley*†‡, LM McMillan‡, V Sandilands‡, BJ Tolkamp‡, PM Hocking§ and RB D'Eath‡

† Animals Department, Harper Adams University College, Newport, Shropshire TF10 8NB, UK
‡ Scottish Agricultural College, West Mains Road, Edinburgh EH9 3JG, UK
§ The Roslin Institute and Royal (Dick) School of Veterinary Studies, Roslin BioCentre, Midlothian EH25 9PS, UK
* Contact for correspondence and requests for reprints: lbuckley@harper-adams.ac.uk

Abstract

*Choice tests may aid determining whether qualitative dietary restriction improves the welfare of feed-restricted broiler breeder chickens (*Gallus gallus domesticus*). However, hunger-stress may reduce competency to choose by impairing learning. The effect of chronic feed restriction on the ability of broiler breeders to learn a hunger-relevant discrimination task was investigated using a Y-maze paradigm. The task was to associate black and white arms with large and small quantities of feed. Birds were reared to three growth curves by means of severe (n = 12), moderate (n = 12) or very mild feed restriction (n = 12). Learning the task and selecting the larger food option allowed birds to increase their feed intake. Time taken to traverse the Y-maze was also measured. Birds from all treatment groups traversed the Y-maze more quickly over time, indicating that they had learnt that running down the Y-maze arms was associated with a rewarding outcome (food). However, feed restriction significantly reduced their ability to associate the black and white cues with differences in food quantity. Consequently, average pay-offs in terms of daily feed increments disproportionately accrued to the less feed-restricted treatment groups. It is concluded that feed restriction affected the performance of broiler breeders in this task, perhaps by narrowing their attention such that they ignore potentially hunger-relevant contextual cues. However, low overall group success rates demonstrate that this task was difficult to learn even for less severely feed-restricted birds. Therefore, Y-maze choice tests may not be the most appropriate method for determining hungry broiler breeder dietary preferences.*

Keywords: *animal welfare, broiler breeders, choice test, feed restriction, learning, stress*