

The effects of training for behavioural tests on chicken welfare

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Behavioural tests are commonly used to assess animal welfare; however, they often require training prior to testing. Some tests, for example, the cognitive judgement bias test, require habituation to various elements of testing, and shaping to perform operant responses. Such training might affect the animal's welfare, which could in turn influence the validity of behavioural tests that require training as welfare assessment tools. To investigate the effect of training on chicken welfare, two groups of laying hens were used in a preliminary study: 1) treatment (training; n=8), and 2) control (no training; n=7), with both groups housed in a single pen and thus receiving identical housing and management conditions. Treatment chickens underwent 19 sessions of daily training, consisting of habituation and shaping for a spatial Go/No-go judgement bias test with trial self-initiation (Hintze et al., *Sci. Rep.* 8: 5104, 2018). Habituation included handling, transport in a box from the home pen to a training arena, social isolation, moving elements within an arena, and eating from goal-boxes. Shaping involved associating pecking at a trial initiator (suspended bell) with a primary reinforcer (food) provided with a reward stick. Welfare was individually assessed before and after treatment chickens received training using a battery of behavioural tests: emergence and open field, novel object, response to standing human and tonic immobility tests. Data were analysed using linear mixed-effects models, with 'treatment' (control, trained) and 'welfare assessment time point' (first, second), and their interaction as fixed effects, and individual chicken as random intercept. Half of the treatment chickens (n=4) progressed to shaping. No statistically significant interaction effects were found; however, descriptive analysis showed an effect of training on escape behaviour. During the first welfare assessment, the percentages in chickens showing escape behaviour were comparable between groups in the open field (both groups: 0%), novel object (control: 29%, training: 36%), and response to standing human tests (control: 14%, training: 12%). In the second assessment, however, only control chickens showed escape behaviour (42%, 57% and 42% of control chickens in the three tests, respectively). A reduction in escape behaviour may indicate that training had a positive effect on fear-related aspects, and the lack of statistically significant differences could be attributed to the small sample size. Thus, two additional batches of chickens will be studied to increase the statistical power. Furthermore, we will investigate whether the full training protocol for the judgement bias test affects chicken welfare.