

The effect of controllability and predictability on anticipatory behaviours in lambs

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The aim of this study was to investigate the effect of predictability and controllability on the behavioural and heart rate responses when lambs were anticipating a reward. 36 female lambs of the breed Romane were allocated into three treatment groups where the Operant Conditioned Lambs (OCL) were trained to perform an operant task for a food reward (US), Pavlovian Conditioned Lambs (PCL) were trained to associate a red light (CS) with US and Control Lambs (CL) were presented with CS and US without a temporal connection between the two. Following training, lambs were tested when the duration between CS and US was five seconds (according to the training routine) and one when the CS-US interval was delayed to 30 seconds. Treatment had an effect on locomotor activity ($\chi^2(2)= 6.23, p=0.044$) where CL showed most locomotor activity. Additionally, PCL spent more time where the anticipated US would be delivered compared to CL ($z=2.83, p=0.013$) and OCL ($z=-2.77, p=0.016$), while OCL spent more time near where the operant task could be performed, more than CL ($z=2.79, p=0.059$) and PCL ($z=3.82, p=0.002$). OCL also repeated the operant task when the interval between CS and US was delayed (on an average of 1.67 times per lamb). There was no effect of treatment on heart rate. In conclusion, predictability and controllability affect the behavioural responses in different ways, while PCL focused more on the expected reward, OCL attempted to repeat the task that would result in the reward.

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