

PLUS T-MAZE TESTING OF PIGS' ABILITY TO LEARN AND CREATE SPATIAL MEMORIES

Sarah Shaver, Holly Kinder, Emily Wyatt, Franklin West

ABSTRACT

Traumatic Brain Injury is a leading cause of death and disability in the United States most often affecting children ages 0-4. The results of this injury may range from temporary pain to permanent impairment in cognition and physical functions. There is an urgent need to develop behavioral tests in large animal models to assess changes in cognition after a TBI and subsequent treatment. Our group has developed a Plus T-maze that can be used to assess learning and spatial memory in a pig model. We hypothesized that normal piglets could learn to navigate a Plus T-maze and form spatial memories using extra-visual cues to locate a food reward. The T-maze test was performed over two weeks and data was gathered on four pigs' ability to learn and choose the correct reward arm of the T-maze as well as the time it takes to make that choice. In order to promote the formation of spatial memories, we randomized the start arm for each trial and placed visual cues around the testing arena. A reversal trial was performed to test the pigs' ability to make and apply new spatial memories. Results supported our hypothesis. Throughout the study, the pigs had a statically significant increase in the proportion of time the correct reward arm was chosen as well a statistically significant decrease in the latency to choice. This data suggests that normal piglets can be tested in a Plus T-maze test to assess learning and spatial memory.