

## Introduction

- The use of an attention-bias test has been used in many aspects of animal husbandry, especially regarding animal welfare
- Attention-bias test is used to measure an animal's response to a perceived threat as well as its affective state
- An affective state is a combination of long-term mood and short-term emotions
- Attention-bias tests have been pharmacologically validated in livestock species but not broiler chickens
- Animals who have been given an anxiogenic treatment that places them in a pharmacologically induced state of anxiety tend to show higher accounts of anxiety-related vigilance behaviors
- This project serves to validate the use of attention-bias tests with broiler chickens
- Two groups of broiler chickens were used
- One group was given an anxiogenic treatment to induce anxiety with one given saline as a control
- An alarm call played and their responses and vigilance behaviors were measured

## Methods

- 204 male Ross 708 broiler chickens housed at 21 days old in pens of 25 birds each
- At 25 days of age, split into two groups, the anxiogenic group and the control group
- The anxiogenic group received 2.5 mg/kg of  $\beta$ -CCM dissolved in dimethyl sulfoxide
- The control group received 9mg/kg saline solution with phenol
- Attention-bias and vigilance behavior tests were conducted in groups of three birds, each marked with a designated number and tested separately
- 8 s alarm call followed by a 30 s interval to record vigilance behaviors and a 480 s interval to record latency to feed, step and vocalize
- If one or two birds fed within 480 s, 8 s call was replayed and the test extended to 600 s
- If all three birds fed, allowed to feed for 5 s, then the alarm call replayed and the test extended to 600 s



Figure 1. Broiler chicken showing the vigilance behavior of a neck stretch



Figure 2. Broiler chicken showing the vigilance behavior of erect posture

## Results

- There were differences between the control group and anxiogenic group for latency to begin feeding, latency to first vocalize and latency for first step
- No significant impact on vigilance behaviors due to the use of anxiogenic treatment
- Those in the control group began to feed faster than those in the anxiogenic group ( $F_{1,66} = 13.47, P < 0.001$ , Fig 3)
- Those in the anxiogenic group began to vocalize faster than the control group ( $F_{1,22} = 12.97, P < 0.001$ , Fig 4)
- Those in the anxiogenic group took their first steps faster than those in the control group ( $F_{1,32} = 4.18, P = 0.050$ , Fig 5)

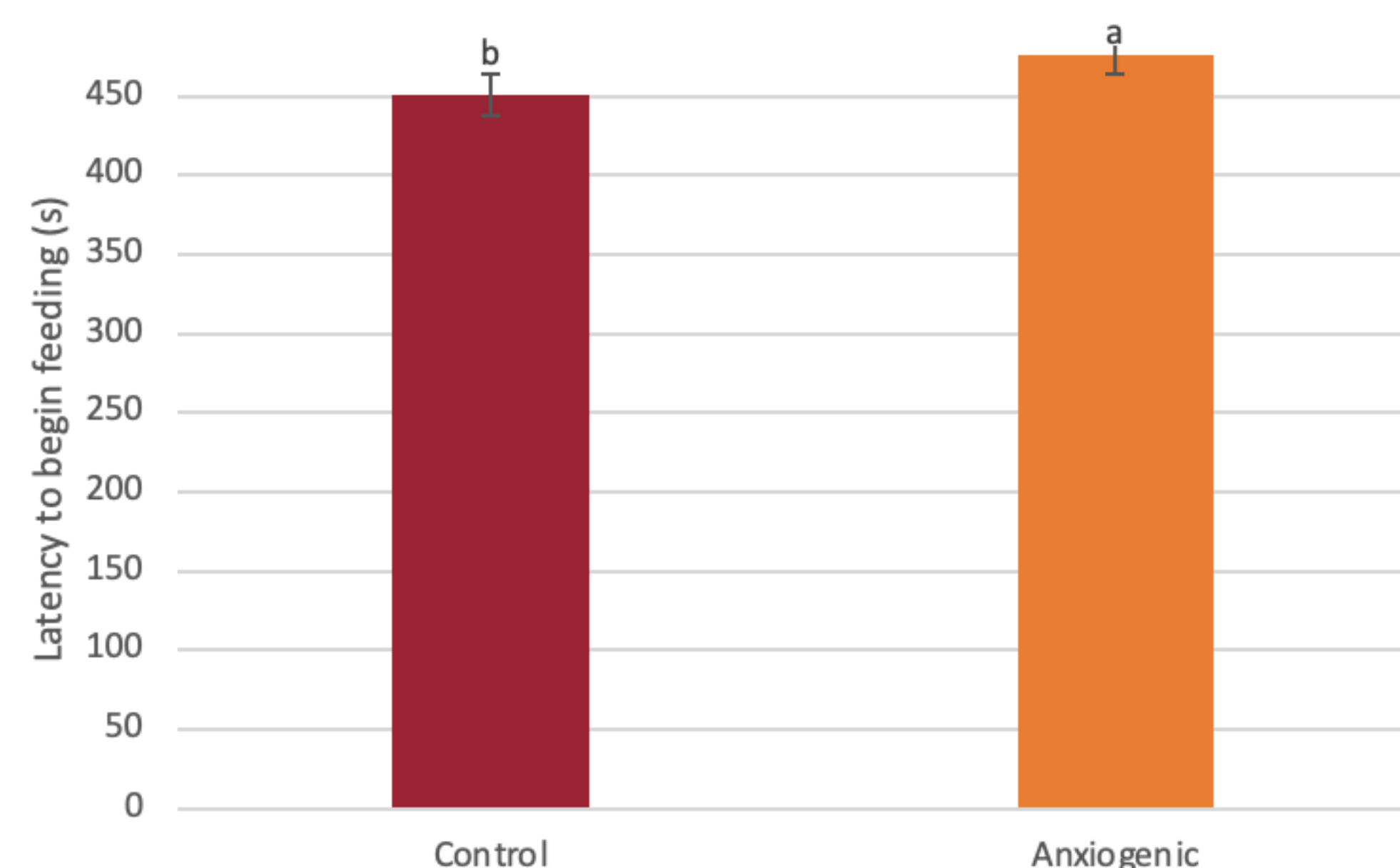


Figure 3. Least squares mean estimates ( $s \pm SEM$ ) for latency to begin feeding ( $n = 68$ ) for broiler chickens from control and anxiogenic treatments at 25, 26, and 27 days of age. Bars lacking a common superscript differ at  $p \leq 0.05$ .

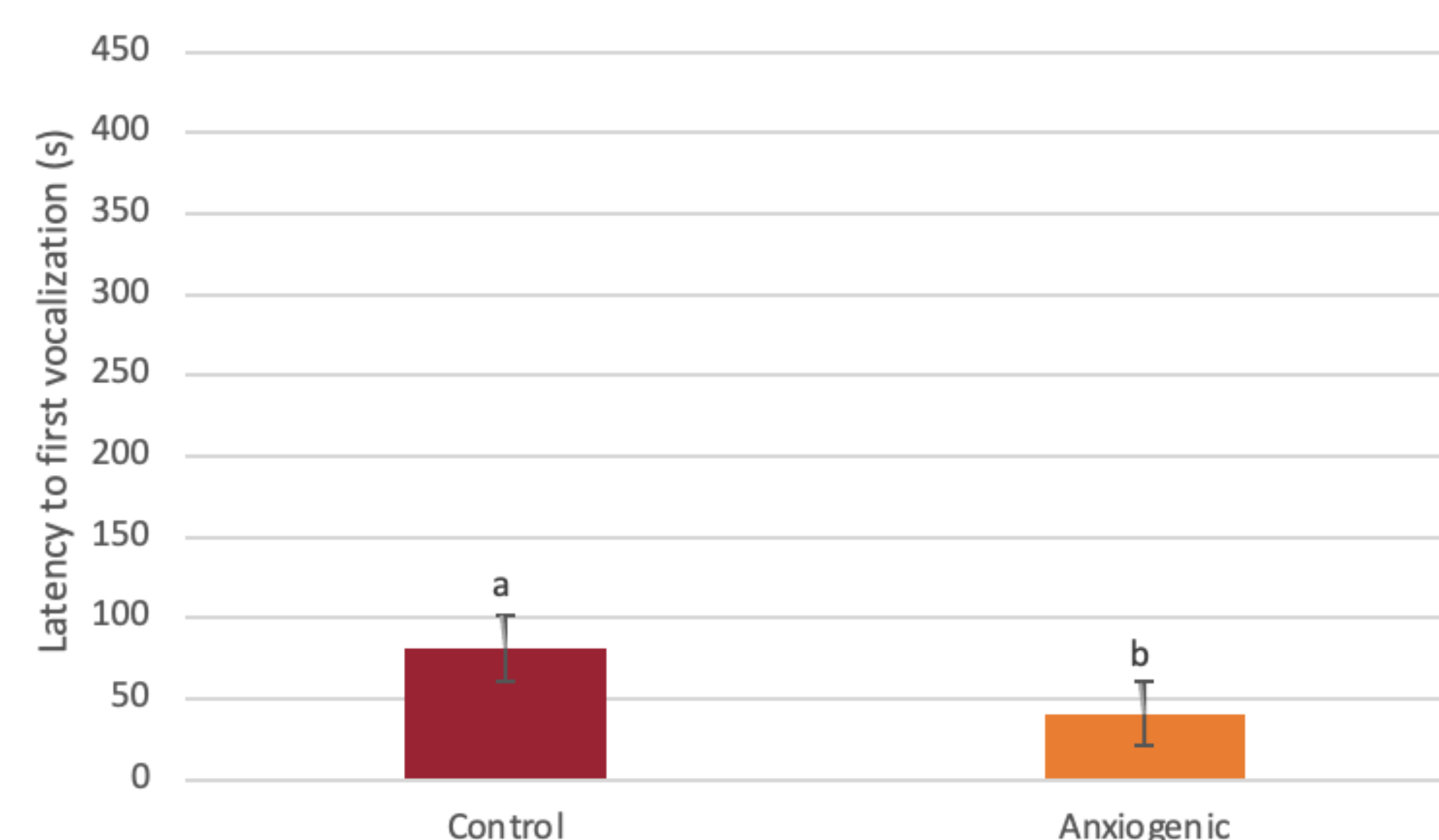


Figure 4. Least squares mean estimates ( $s \pm SEM$ ) for latency to first vocalization ( $n = 23$ ) for broiler chickens from control (saline) and anxiogenic treatments at 25, 26, and 27 days of age. Bars lacking a common superscript differ at  $p \leq 0.05$ .

## Discussion

- There were no differences between the vigilance behaviors exhibited by the control and anxiogenic group
- There were differences for latency to begin feeding, latency to first vocalization and latency to first steps
- Birds placed in a pharmacologically induced state of anxiety responded differently to the perceived threat than the control group
- The anxiogenic group was faster with first vocalization and first step which correlates to a negative affective state such as anxiety
- The use of cognitive tests such as attention-bias and vigilance behavior tests are powerful tools used to measure an animal's response to a stimulus and whether or not they are in a negative affective state such as anxiety
- These tools allow for the measurement of different management practices in poultry industry

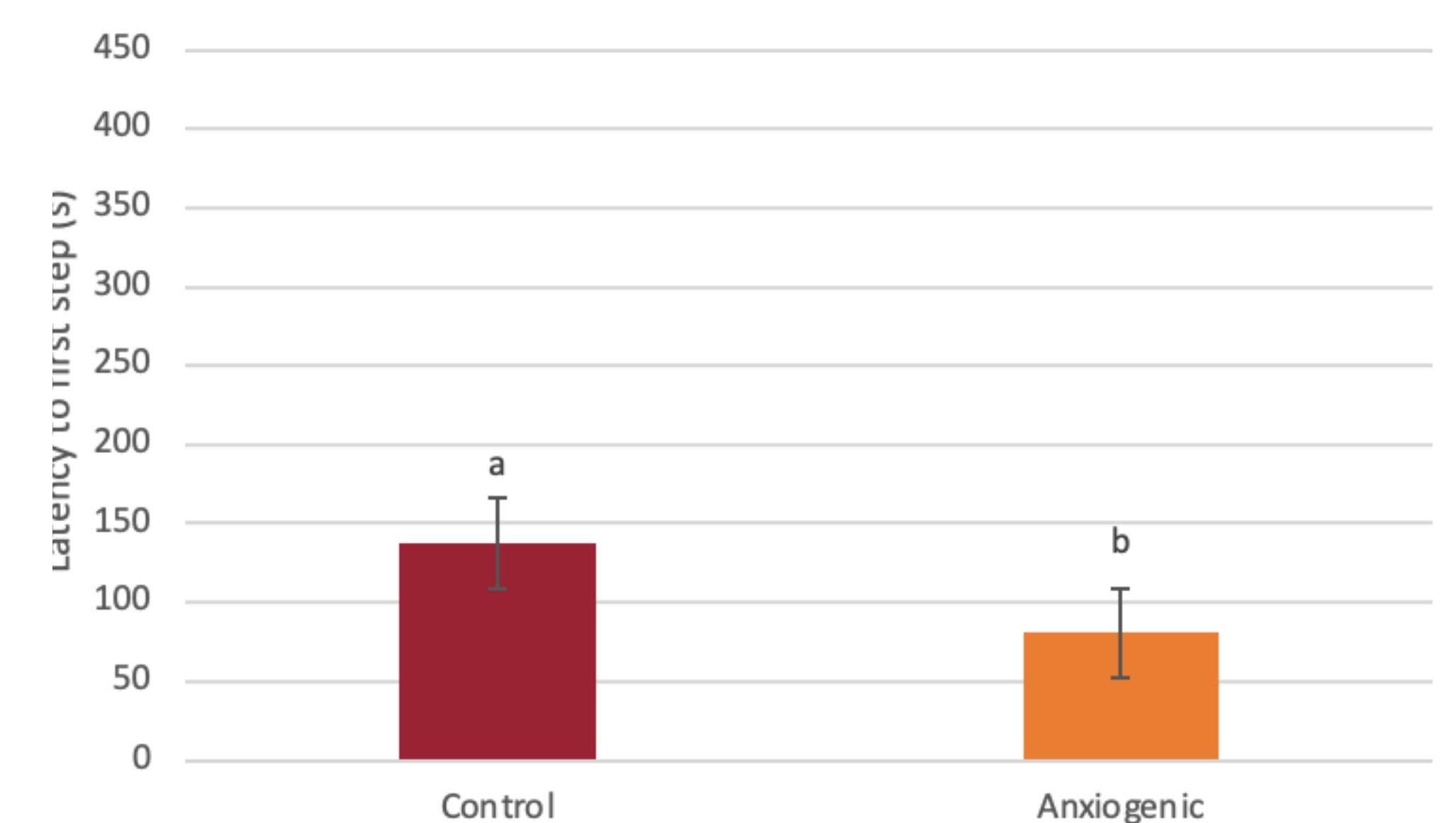


Figure 5. Least squares mean estimates ( $s \pm SEM$ ) for latency to first step ( $n = 33$ ) for broiler chickens from control and anxiogenic treatments at 25, 26, and 27 days of age. Bars lacking a common superscript differ at  $p \leq 0.05$ .

## Conclusion

- This project was successful in pharmacologically validating the use of attention-bias tests in broiler chickens
- The broiler chickens that were given an anxiogenic treatment showed more instances of anxiety related behaviors such as latency to first vocalize and latency to first step
- The broiler chickens in the control group showed less anxiety related behaviors and were faster to begin to feeding
- There were no significant differences between the two groups regarding vigilance behaviors (freeze, erect posture, neck stretch, looking around)

## References

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