

Who is looking? Eyespot cues as a tool to assess affective state in the red junglefowl

Alessandra Munari

Supervisors: Hanne Løvlie & Laura Garnham

IFM Division of Biology – Linköping University | alemu075@student.liu.se, MSc student



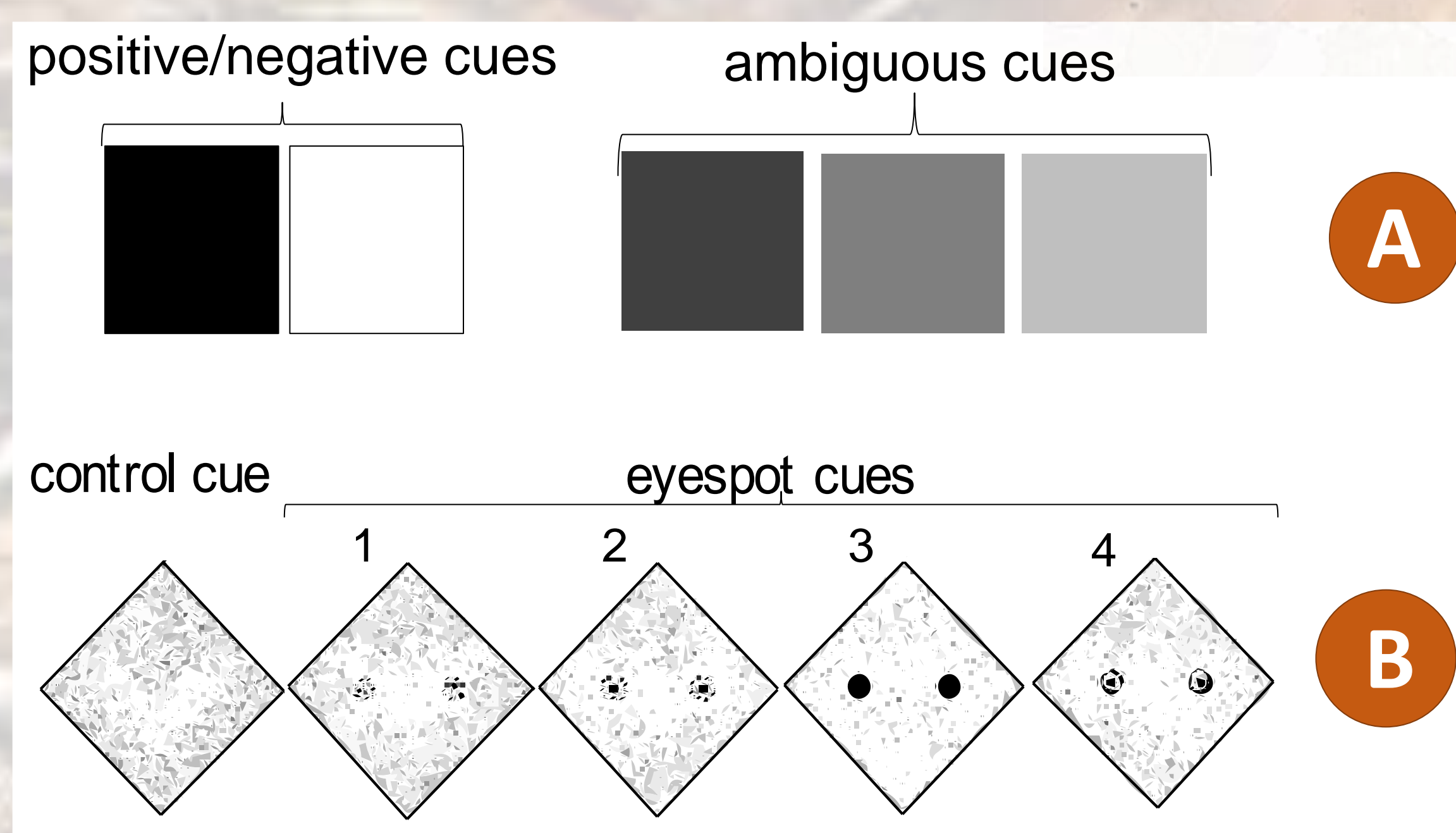
Background

To provide good animal welfare requires accurate interpretation of affective state. The most common affective state test (cognitive judgement bias test), needs **extensive training** of animals. Most birds show **innate response of avoidance** towards eyespot patterns and birds showing weaker reactions could be in a better state. Moreover, training prior to testing is not needed.



To validate a simpler alternative to the judgement bias test, we tested if red junglefowl chicks' **responses to ambiguous cues** from the judgement bias test correlated with **responses to eyespot patterns** used as cues in a here designed "eyespot test".

Figure 1: cues used for A) the judgement bias test B) the eyespot test; cue 1 and 2: ambiguous eyespot cues; cue 3 and 4: full eyespot cues. The ambiguous **middle grey cue** and the **full eyespot cue 3** are the cues whose responses correlated the most in the original tests. The same cues were the only cues used for the simplified tests.



Methods

We tested red junglefowl (*Gallus gallus*) chicks from two cohorts with both judgement bias test and eyespot test in two versions differing in the number of test cues: **original** and **simplified** version. In the **judgement bias test**, after training chicks to discriminate a positive and a negative cue, we measured the **latency to approach ambiguous cues** and compared it to responses to learnt cues. A response closer to responses to the positive cue putatively indicated a better state. In the **eyespot test**, after chicks learnt to associate a position (control cue) with a reward, we measured the **latency to approach and distance from a full or ambiguous eyespot cue** in the same position and compared them to responses to the control cue. A response closer to responses to control cue putatively indicated a better state.

Results

Chicks **learnt** that the **ambiguous cue** was **unrewarded** after several exposures with the simplified tests. **Age and sex** affected the **strength of responses**. **Females** tested at **older age** showed a moderately strong positive relationship between **latency to approach** the middle grey ambiguous cue in the judgement bias test and both **distance approached** and **latency to approach** the full eyespot cue 3 in the original tests.

Conclusions

The **original** eyespot test using one of the **full eyespot cues** is supported as simpler alternative to the judgement bias test for **female** chicks tested at **older age**.

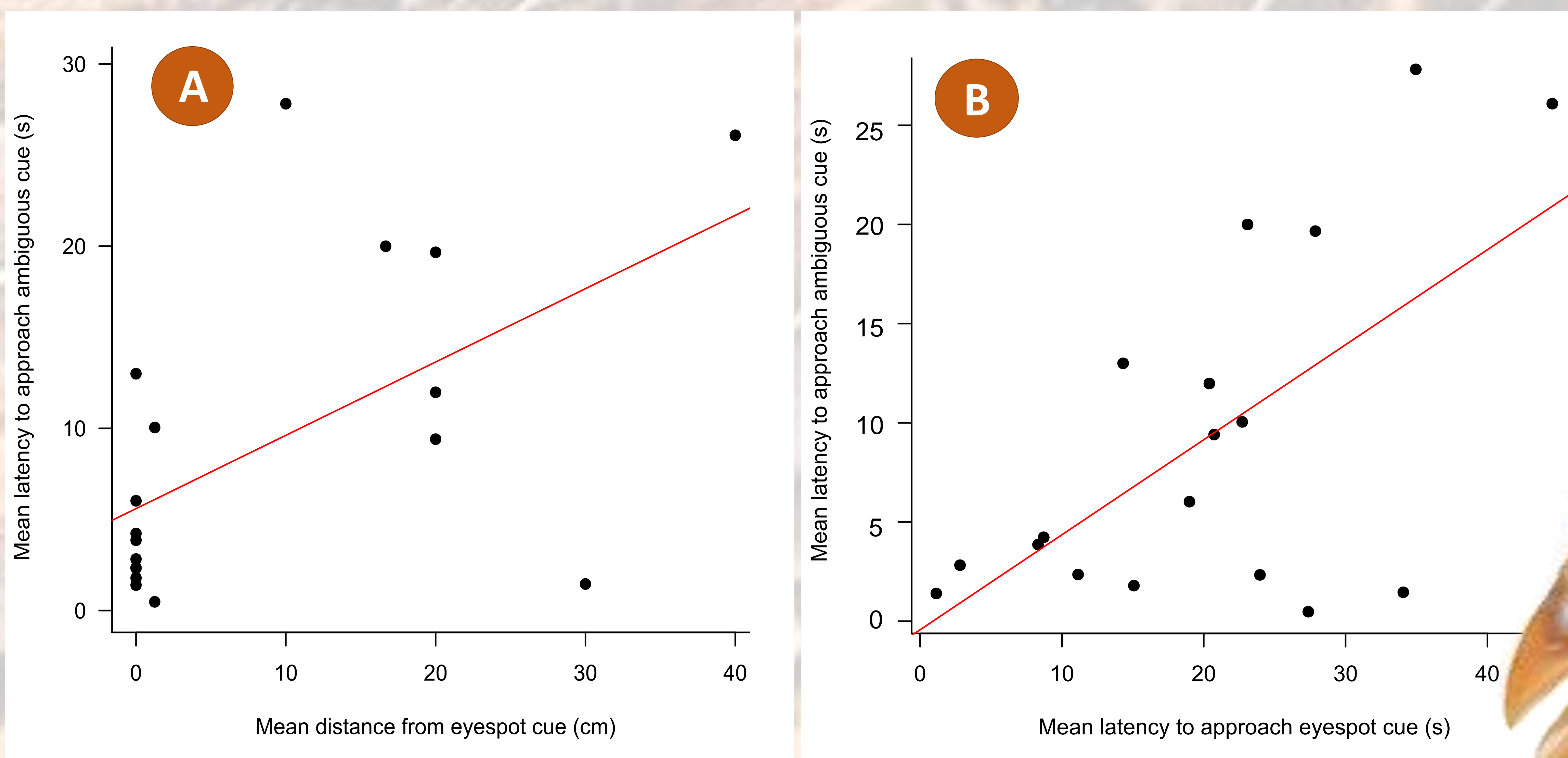


Figure 2: the comparison of behavioural responses of females to the middle grey cue from the original judgement bias test at 2 weeks and to the full eyespot cue 3 from the original eyespot test at 8 weeks shows a moderately strong positive relationship between A) latency and distance ($R_S = 0.45$, $n = 18$, $p = 0.06$) and B) latencies ($R_S = 0.39$, $n = 18$, $p = 0.11$). Results from Spearman's test when not accounting for loss of ambiguity. Correlation line in red.

Scan here to meet a chick!

