

# Effects of filial imprinting on a model hen on the emotional state of White Leghorn chicks

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## 1. Introduction

In layer hen commercial production systems, chicks are exposed to different stressors. One example is that they are not raised by any living adult animals and do not receive any maternal care. In the wild, newly hatched chicks undergo filial imprinting, where they create a social bond with the mother hen. This bond and the maternal care influence the emotional development of the chicks.

## Aim

Examine effects of filial imprinting on a model hen on the emotional state of White Leghorn chicks (*Gallus gallus domesticus*), short-term and long-term.

## Hypotheses

- (1) Imprinted chicks would show more optimism than non-imprinted chicks.
- (2) Imprinted chicks would show less fearful behavior compared to non-imprinted chicks.

## 3. Results

### Judgment bias test:

Latency until chicks passed stimuli at 5 weeks old (Figure 3).

- Significant differences between treatments.
  - Non-significant following Bonferroni correction.
- Imprinted chicks slower than control chicks in passing morph (Figure 3, brown circle).
  - Indicating more pessimistic behavior in imprinted chicks.

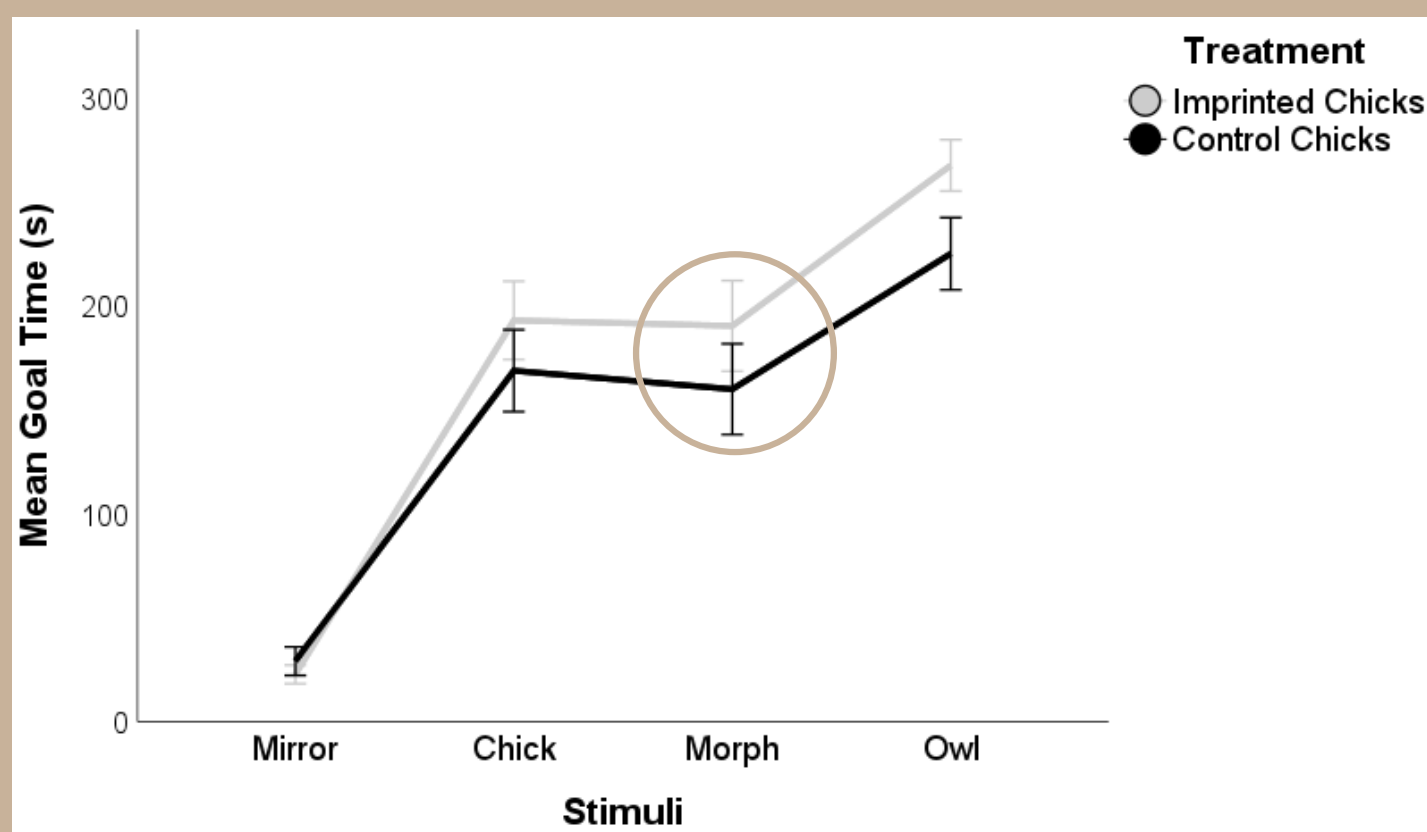


Figure 3. Latency to pass the stimuli at 5 weeks of age.

## 2. Methods

- **Step 1:** Hatched chicks at Linköping University.
- **Step 2:** Filial imprinting procedure directly after hatch on half of the chicks on a stuffed hen (Figure 1). Placed remaining chicks in a dark box.
- **Step 3:** Judgment bias test. Presented a mirror and three pictures separately. Recorded start walking- and pass stimuli latency. Tested at 1 and 5 weeks of age (Figure 2).
- **Step 4:** Open field test. Exposed to an empty field. Recorded 3 fear-related behaviors. Tested at 1 and 6 weeks of age.
- **Step 5:** Novel object test. Added a novel object in the field. Recorded 6 fear-related behaviors. Tested at 1 and 6 weeks of age.



Figure 1. Filial imprinting set-up.



Figure 2. Stimuli used in judgment bias test at a) 1 week of age and at b) 5 weeks of age.

### Open field test:

Number of escape attempts in 1 and 6-week-old chicks (Figure 4).

- No significant differences between treatments.

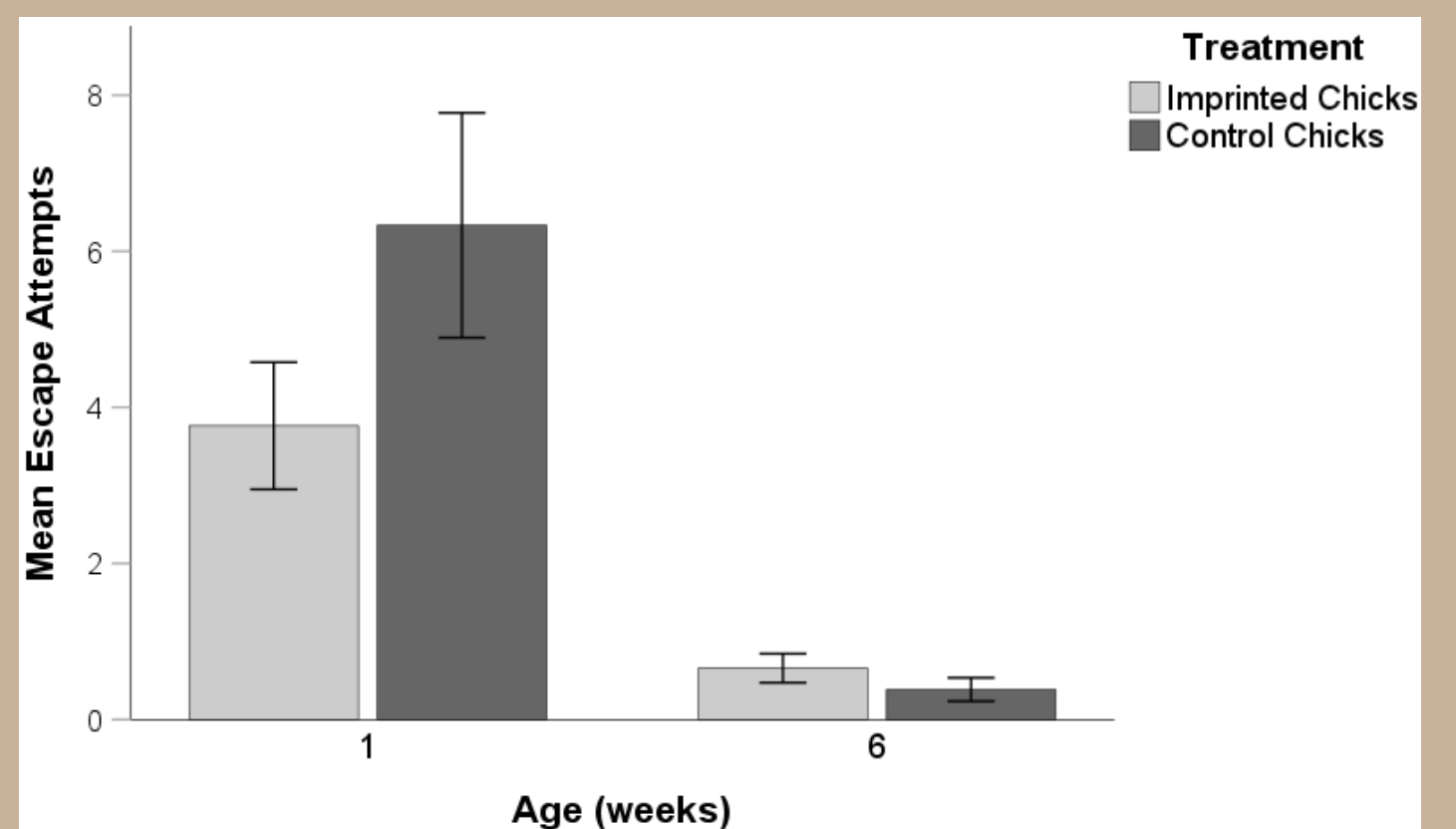


Figure 4. Number of escape attempts at 1 and 6 weeks of age.

## 4. Conclusions

The results were inconsistent with hypothesis (1) and hypothesis (2), indicating imprinting on a model hen, did not have a positive impact on the emotional state of the chicks. Further studies needs to be performed to find methods to reduce early life chick stress in layer hen commercial hatcheries to improve chick welfare.