Impact of positive handling, environment, and management practices on calf and heifer future behavior and performance as milking cows

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KENTUCKY

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Outline

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Outline –

- Introduction
  - Calf development and its influence on later performance
- Early socialization
- Human- Animal Interaction
- Myths and solutions

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Take Home Messages

- Individual housing makes cows behave abnormally. We are just blind to it.
- A more positive management comes in many forms, not just in “fear-free handling”.
- A lot of opportunity for all farms, small, median and large. Its time for us to be creative.

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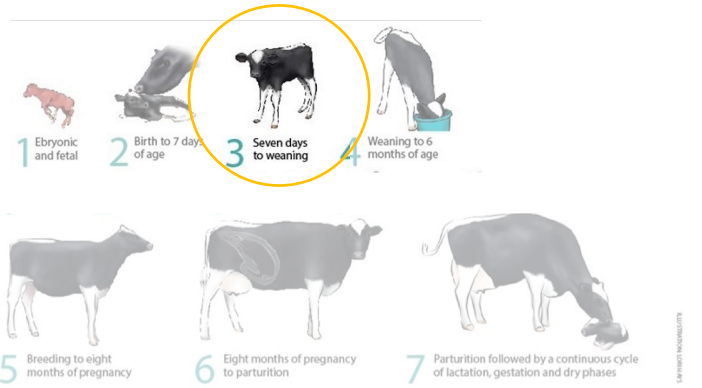
Introduction



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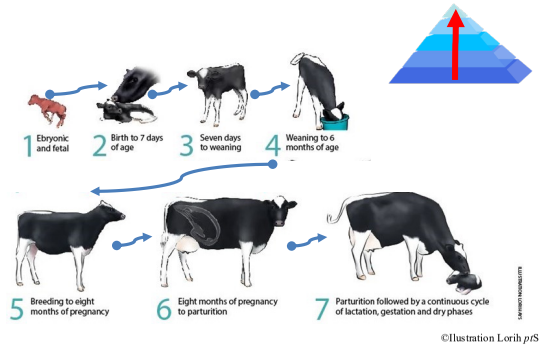
Introduction



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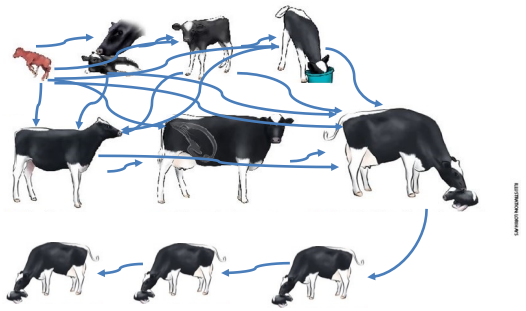
Introduction



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Why are we discussing this: Social Isolation

- An absence or low frequency of peer interaction during an extended period of time *Gottman (1977)*
- More pronounced detrimental effects in early life

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Individual housing is associated with…

- Lower social ranking and competitive success
- Increased aggressiveness
- Increased fear responses

See review by Costa et al., 2016

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Adaptability: Effects of an "enriched" environment….

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Adaptability and flexibility: Reversal Learning

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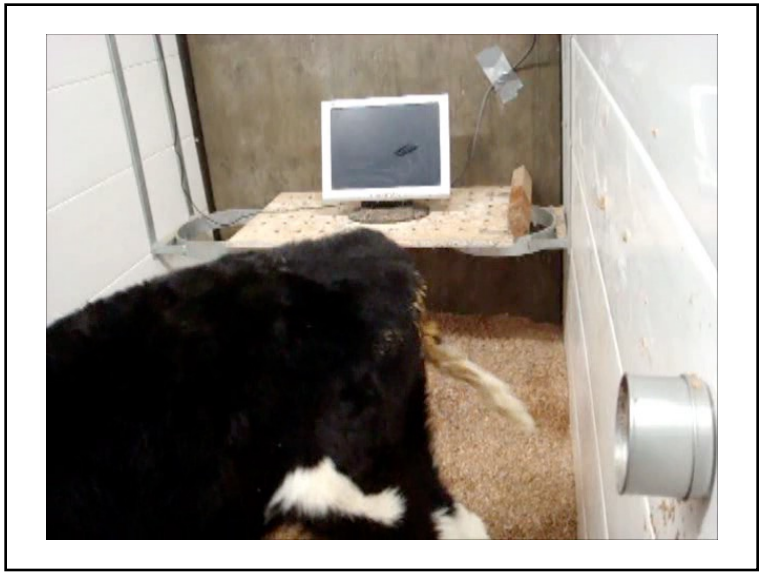
Effects of social rearing on cognition

Initial Discrimination

Positive approach for milk reward	⇔	**Negative** do not approach; time-out punishment

14



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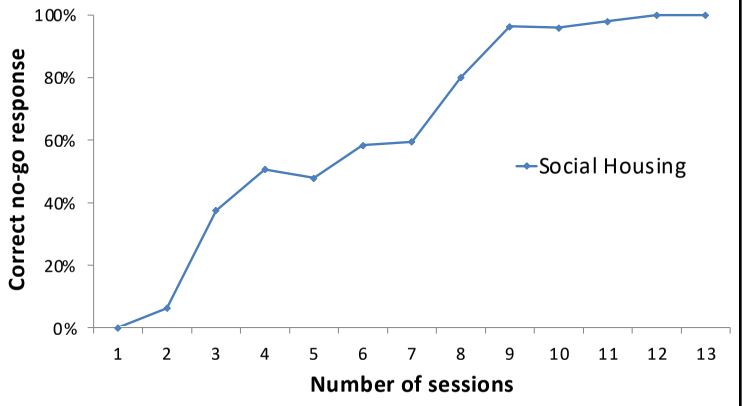
Discrimination learning



Meagher et al., 2015

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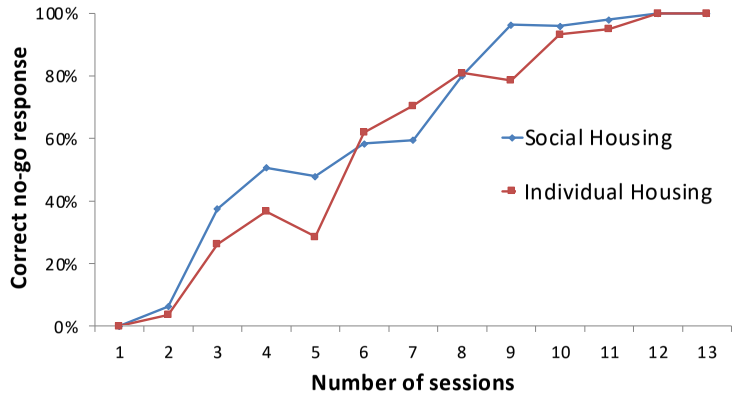
Discrimination learning



Meagher et al., 2015

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Effects of social rearing on cognition

Initial Discrimination

Positive approach for milk reward ⇔ **Negative** do not approach; time-out punishment

Reversal

Positive approach for milk reward ⇔ **Negative** do not approach; time-out punishment

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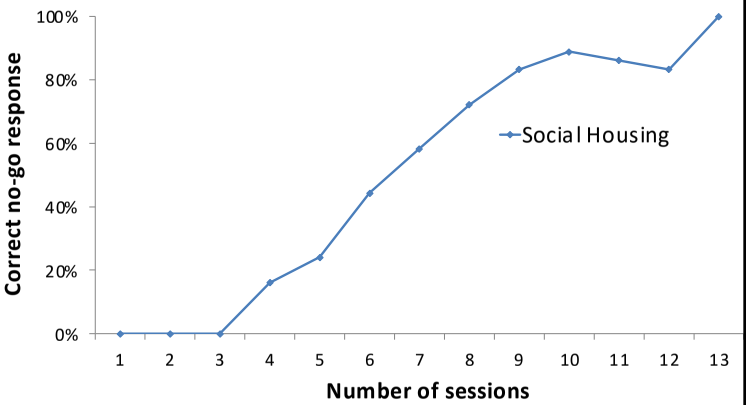
Reversal learning



Meagher et al., 2015

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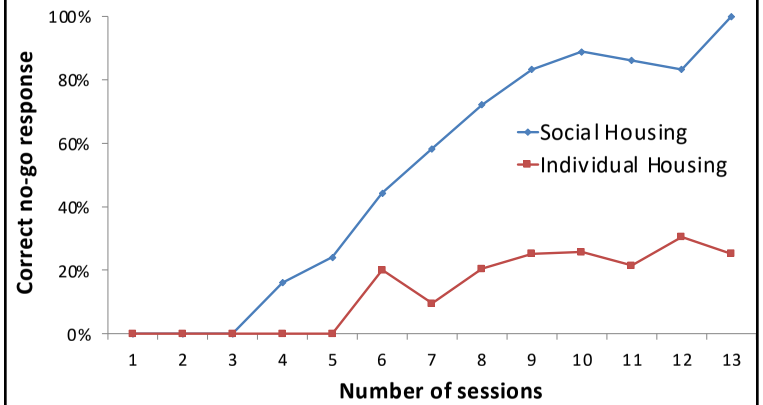
Reversal learning



Meagher et al., 2015

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But my calves do not play with computers….

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Food neophobia test

- 70 d of age
- Presented 2 kg of:
  chopped carrots (n = 8)

- The test lasted 30 min and was repeated 3 times per calf

Costa et al., (2015) J Dairy Science: 97:7804–7810

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Food neophobia test

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How much novel food did they eat?

Costa et al.., (2015) J Dairy Science: 97:7804–7810

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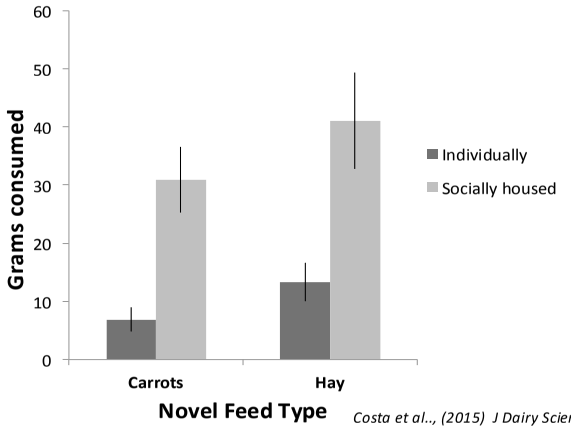

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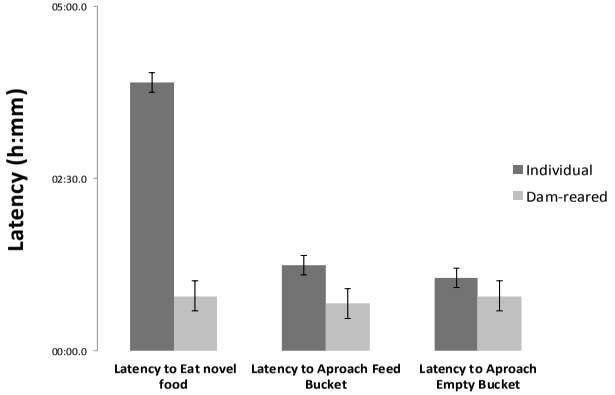
Latency to eat and approach buckets



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Responses to mixing after weaning? Paired versus individual housing

De Paula Vieira et al. 2010. J. Dairy Sci. 93: 3079-3085

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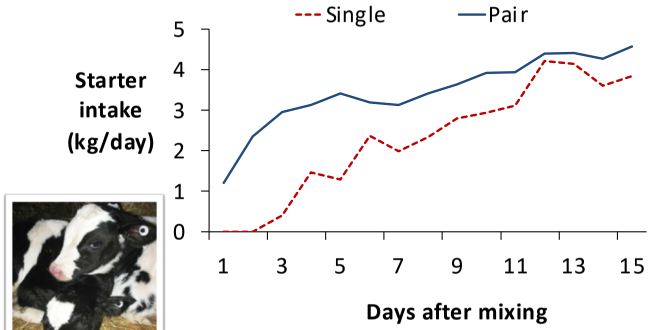
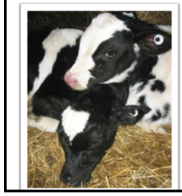
Starter intake was higher after mixing in paired versus individually-housed calves





De Paula Vieira et al. 2010. J. Dairy Sci. 93: 3079-3085

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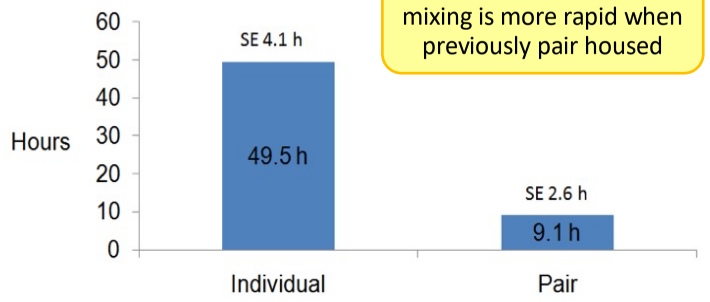
Pair housing improves access to resources at mixing



De Paula Vieira et al. 2010. J. Dairy Sci. 93: 3079-3085

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What type of contact is needed?

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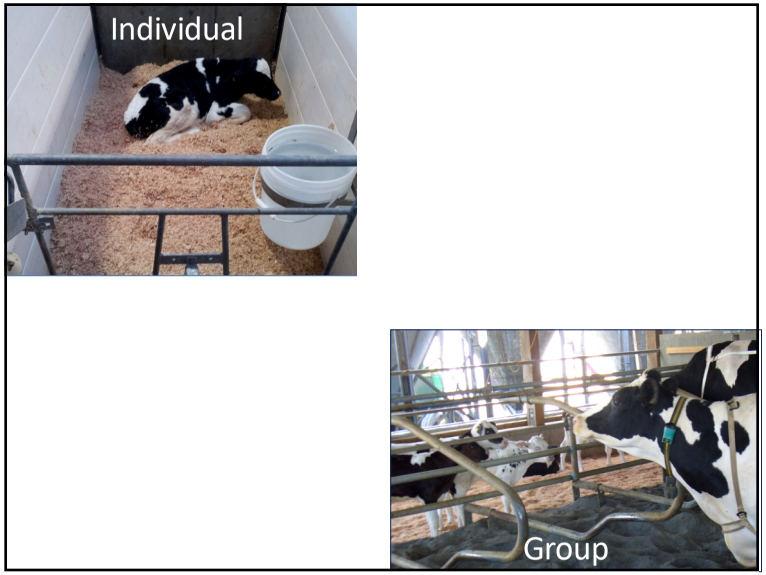

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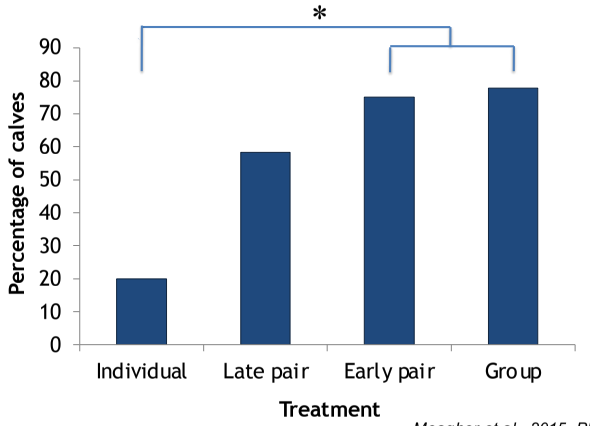
Successful reversal task – Calves that understood the change



Meagher et al., 2015. PLoS One

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Limitations => Future directions

Are the cows on our farms “normal”?

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Limitations => Future directions

- Does the early life environment influence how cows cope with stress?

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Take Home Message… Round 1 of 3

- Early life socialization is likely to **promote behavioural flexibility** and **adaptability** to novelty
- The housing system in which young dairy calves are raised **impacts neophobic behaviours** towards new food items.

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Management – Human Animal relationship

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Human-animal interactions in farm animal production

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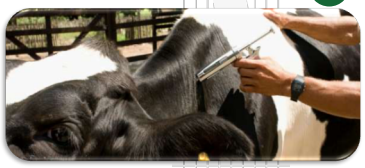

Tactile

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Visual

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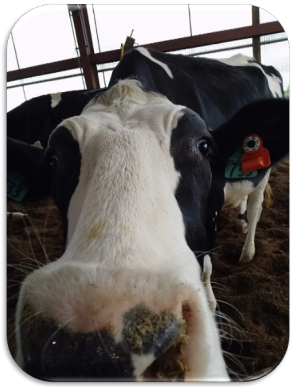

Olfactory

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Auditive

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Nature of interaction
Negative

42

Nature of interaction
Neutral

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Nature of interaction
Positive

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Research

Effects of positive reinforcement training for heifers on responses to a subcutaneous injection

J. Lomb, A. Mauger, M.A.G. von Keyserlingk, D.M. Weary

Animal Welfare Program, Faculty of Land and Food Systems, University of British Columbia, 2357 Mall, Vancouver, BC, Canada V6T 1Z4

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Research

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Heifers received a positive reinforcement (i.e., animals received a grain reinforcer for desired behaviors) to enter a headlock,

After habituated some received an injection and were tested against control heifers to latency to come to the headlock.

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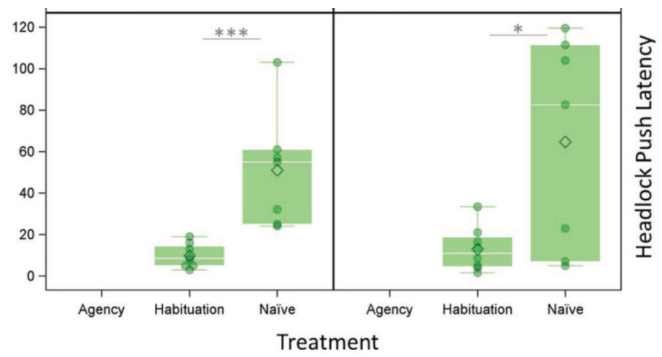
Latency to lock….



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Examples

- Naïve heifers in the milking parlor
- Free-stall teaching
- Robot training

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Tech inclined calves…

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Last point- Cow to cow

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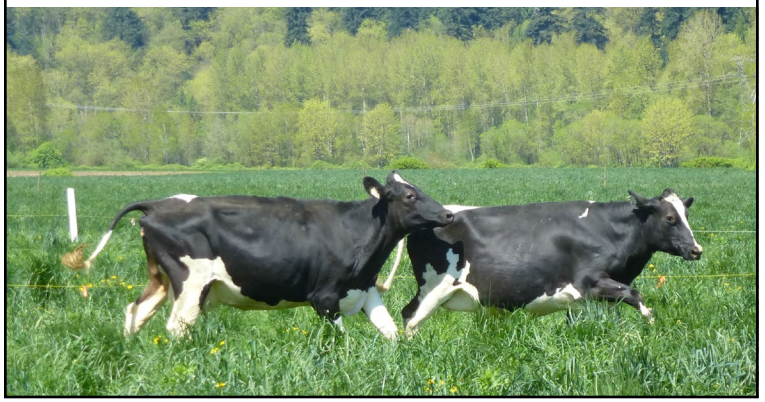
The effect of an **experienced social model** on the responses of heifers to a **novel situation**



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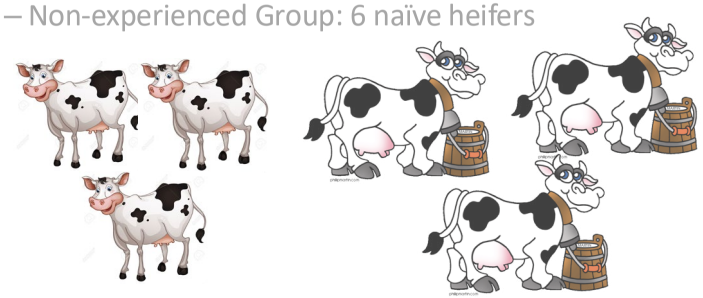
Treatments

– Non-experienced Group: 6 naïve heifers



– **Experienced Group: 3 naïve heifers**

+ 3 experienced dry cows

Costa, et al., 2016b. Confined heifers benefit from having an older experienced cow present when learning how to graze. J. Dairy Sci.

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Groups were introduced to pasture

Costa, et al., 2016b. Confined heifers benefit from having an older experienced cow present when learning how to graze. J. Dairy Sci.

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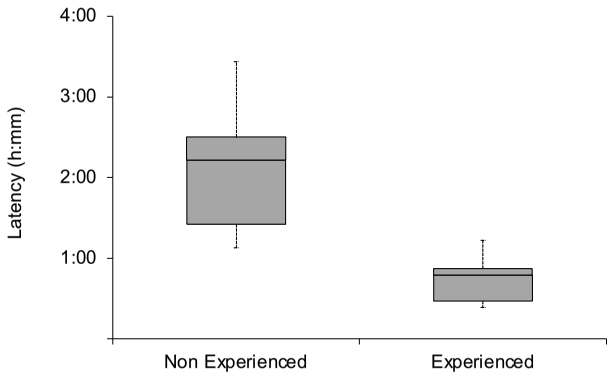
Latency to graze



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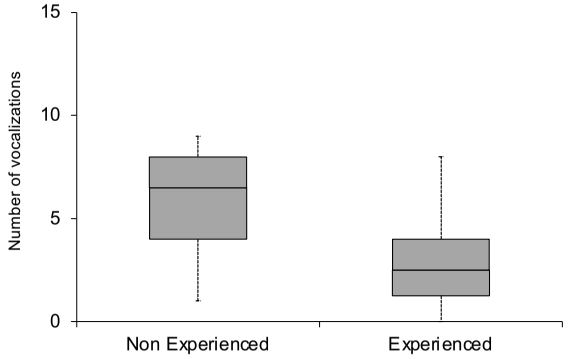
Vocalizations during the 1st hour



Costa, et al., 2016b. Confined heifers benefit from having an older experienced cow present when learning how to graze. J. Dairy Sci.

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Opportunities everywhere….

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Take Home Messages

- Individual housing makes cows behave abnormally. We are just blind to it.
- A more positive management comes in many forms, not just in “fear-free handling”.
- A lot of opportunity for all farms, small, median and large. Its time for us to be creative.

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Questions?

Disclosures

Joao HC Costa, PhD

Financial relationships:

Dr. Costa is employed at University of Kentucky

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Patrocinadores de pesquisa do UKY Dairy Science Program

MSBiotec technology by nature's design

USDA NIFA

United States Department of Agriculture
National Institute of Food and Agriculture

DAIRYMASTER

SMARTBOW

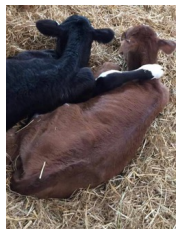
Biorigin Art in Natural Ingredients

zoetis

iCEROBOTICS

Alltech DeLaval

ZINPRO



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Colaboradores:

Ceva, Acumen Detection, Future Cow Inc., AAD diagnostics

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