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THE EFFECTS OF HEN VOCALIZATION ON CHICKS FEED INTAKE

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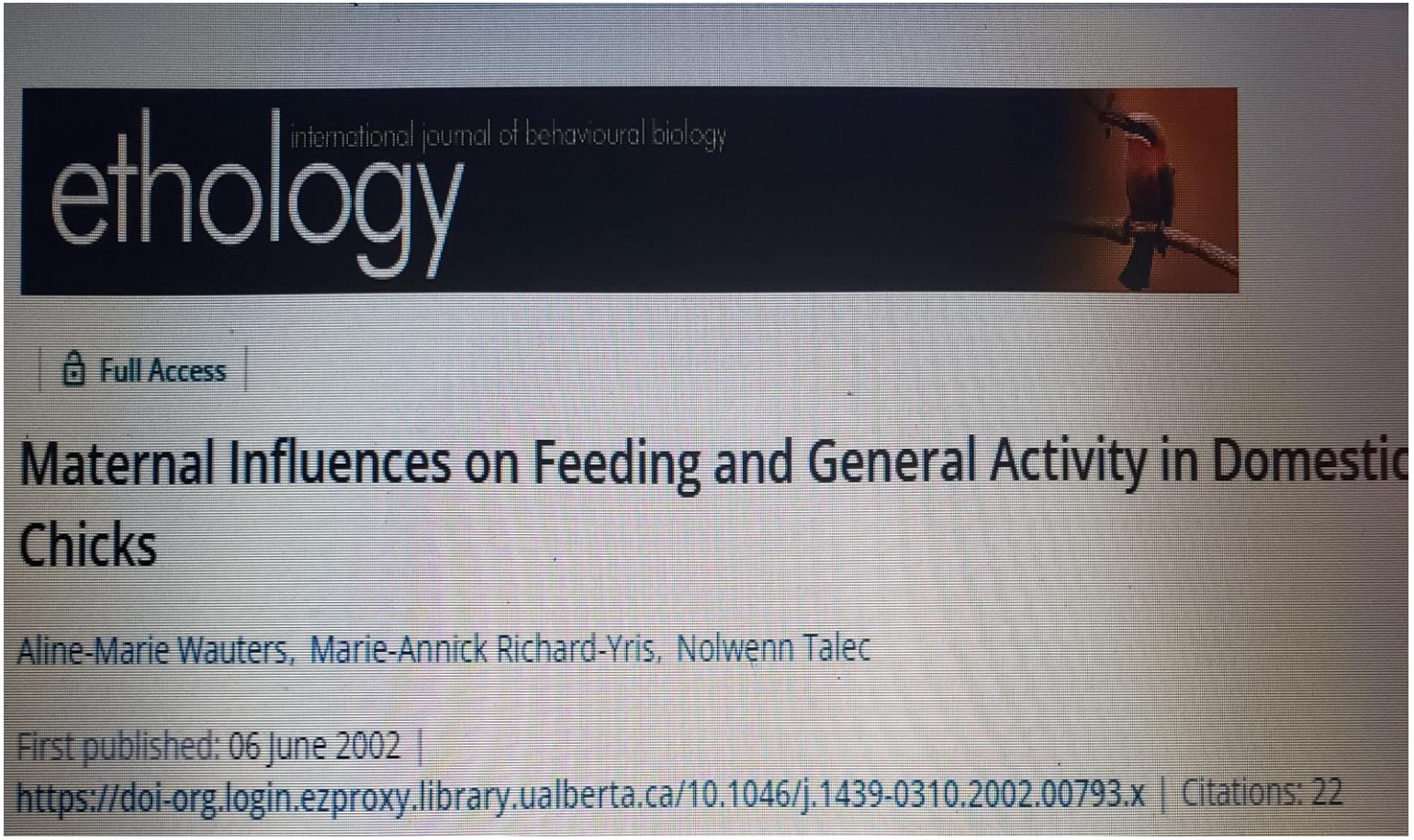
Background

- In a natural environment, mother hen aids chicks in finding feed by vocalizing and using visual displays, such as pecking (Clarke & Jones, 2001).
- Vocalization - increased feeding activity of brooded chicks and welfare (Gentle, 1985; Kent, 1987).

Study 1



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Maternal Influences on Feeding and General Activity in Domestic Chicks

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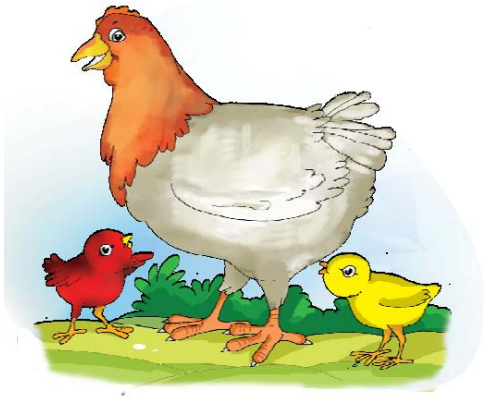
Objectives

- To determine the existence of food preference in both brooded and non-brooded chicks.
- Evaluate the influence of maternal behavior on the growth and feeding behavior of chick's growth and feeding behavior.

Methodology

- Two types of groups. 20 groups of brooded (2chicks per group), including a maternal hen and her two chicks, and
- 14 groups of non-brooded groups (two chicks per group) only.
- Three different food were provided; corn, wheat, sunflower cattle-cake.
- Data were analyzed using ANOVA.

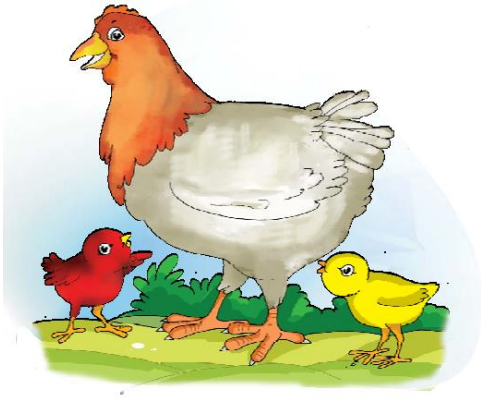


Methodology

Duration: 7days.

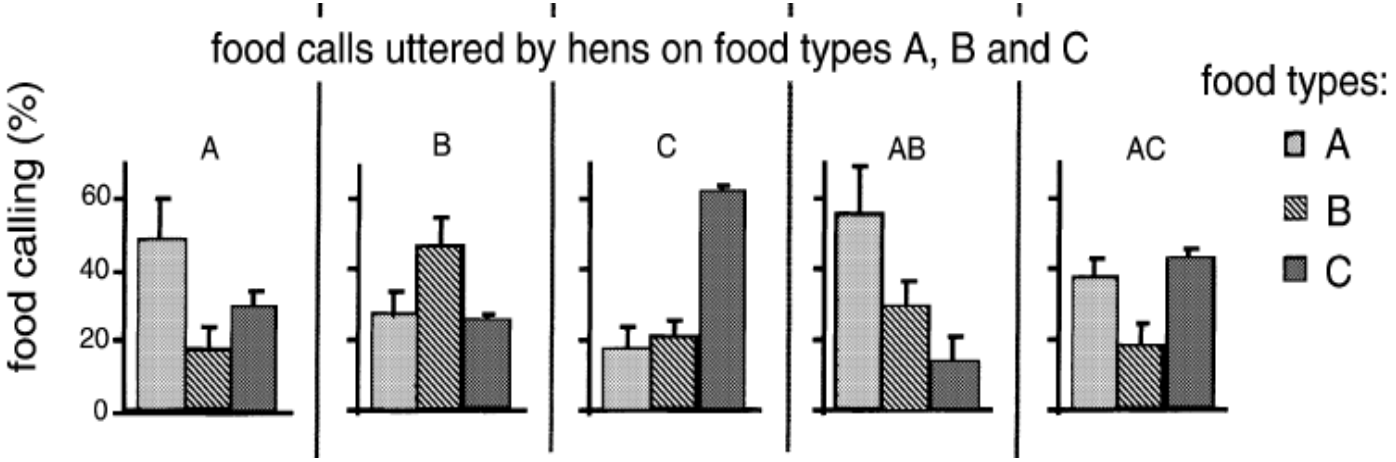
Parameters analyzed

- Consumption rate of the 3 kinds of feed.
- Locomotive activities of chicks.
- Feeding behavior of chicks in relation to maternal feed preferences and food calling.



Result

Fig 1: Food calls for each food type by maternal hens in relation to the hens' preference.



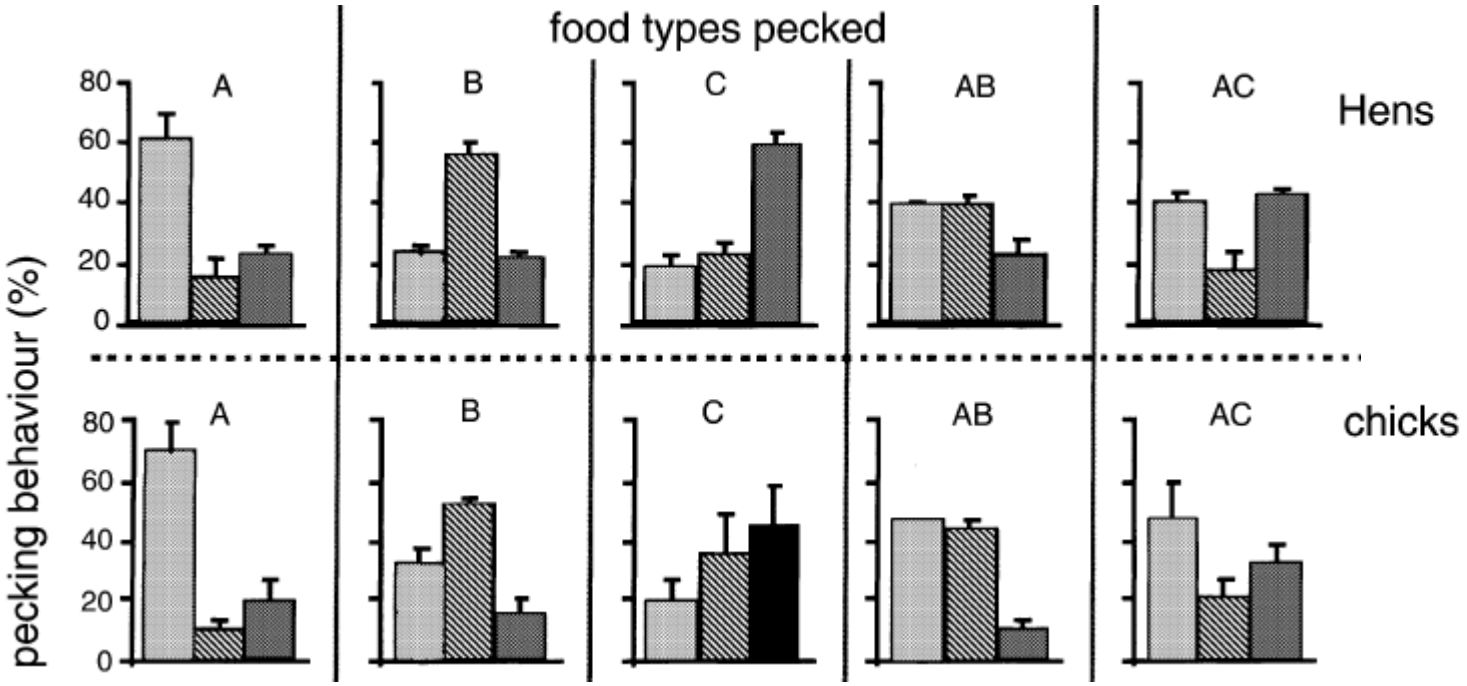
A= Corn

B=Wheat

C=Sunflower cattle cake

Result

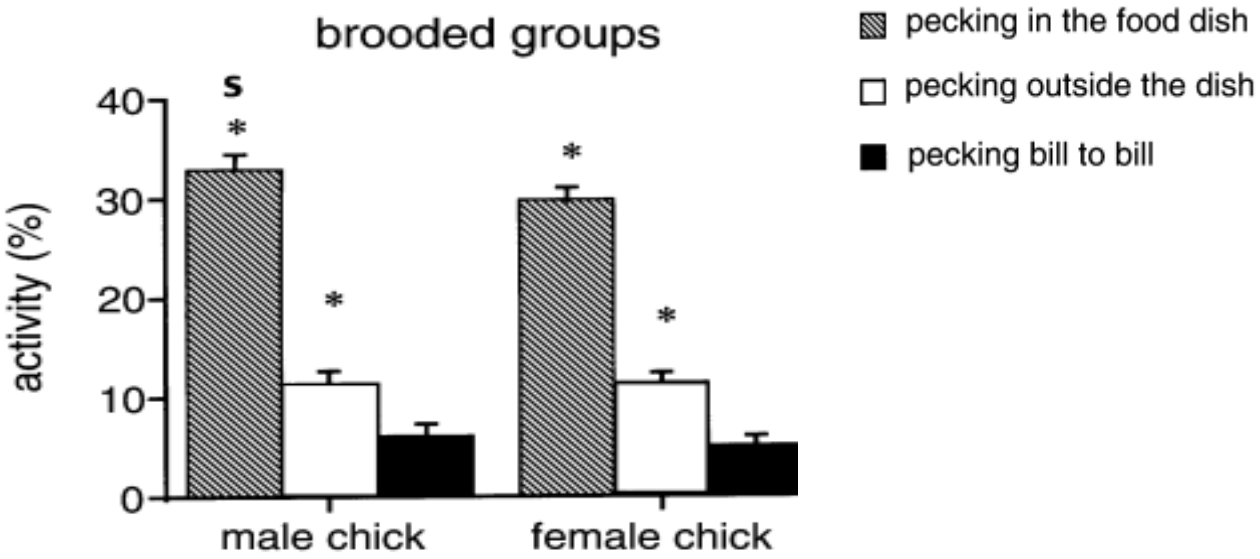
Fig 2: Chick's preference feeding on each type of food is directly proportional towards the food type their mother chose to feeds on.



A= Corn
B=Wheat
C=Sunflower cattle cake

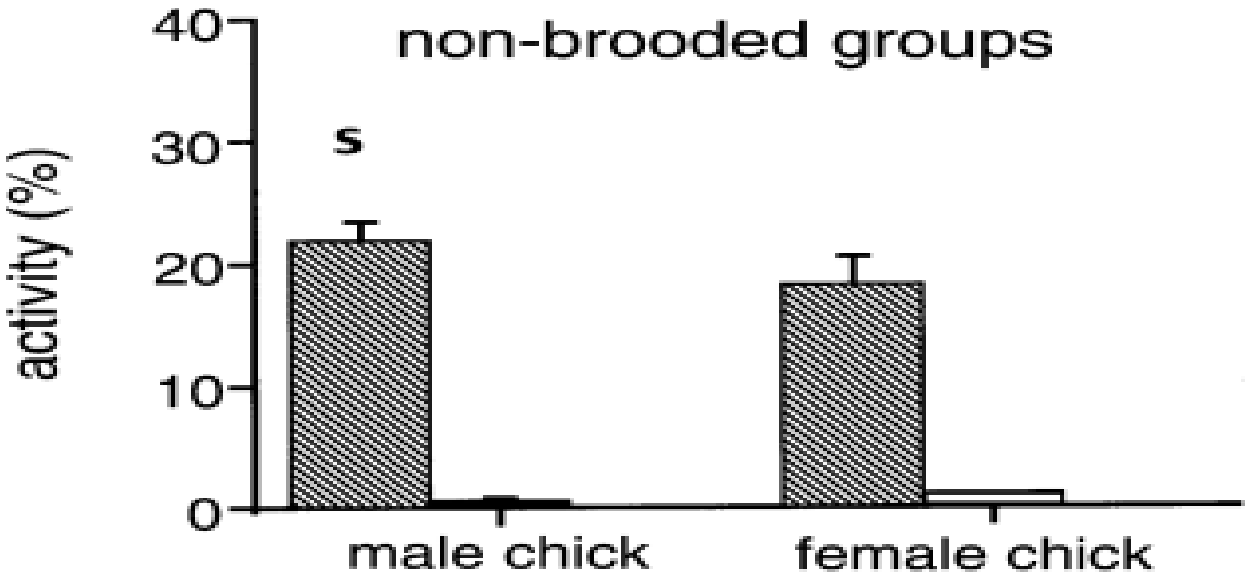
Result

Fig 3: This activity is nearly always directed towards the mother's bill.



Result

Fig 4: This activity shows non-brooded chicks obey one and almost none other directives than pecking in the dish.



Result

Table 1: Mean Percentage ($\pm$SEM) of pecking directed towards the three food types.

Group	Pecking activity directed towards		
	A	B	C
Brooded chicks	$41.31 \pm 3.48^{*c}$	33.46 ± 3.02	$25.28 \pm 3.20^{*a}$
Non-brooded chicks	28.53 ± 2.71^{c}	28.05 ± 2.79^{c}	43.41 ± 3.95^{ab}

A= Corn
B=Wheat
C=Sunflower cattle cake

Result

Weight:

Brooded chicks: Mean weight of 80.2 $\pm$ 1.3g.

Non brooded chicks: 94.0 $\pm$ 1.8g.

Remarks

- There is a relationship between maternal food call emission and the food preference of chicks.
- Brooded chicks fed more than non brooded chicks.
- Brooded chicks weighed lighter than non brooded chicks.
- There is an influence of maternal behavior on the growth and feeding behavior of chicks.

Study 2

ELSEVIER

Poultry Science

Volume 83, Issue 12, 1 December 2004, Pages 1940-1943

Education and Production

The effects of hen vocalizations on chick feeding behavior

Woodcock, M.B., Pajor, E.A., Latour, M.A.

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Objectives

- Evaluate the treatment effects (across the entire time course of the experiment) and its influence on body weight and feed conversion.

- Analyse the chick's behavioural data through hen's vocalization.

Methodology

- Two groups of chicks were placed in environmentally controlled 16 floor pens.
- 8-floor pens equipped with speakers installed between feeder and water troughs.
- Cameras were positioned over the pens.
- Identical feeds were given to the 2 groups.

Methodology

Statistical Analysis: ANOVA within SAS, using PROC GLM.

Duration: 40days.

Parameter analyzed:

- Average body weight gain.
- Average daily gain.
- Feed conversion rate.
- Behavioural data.

Result

Table 2: Average BW (g ± standard error of mean) from Day 1-38 of life.

Day of life	Control	Treated
1	39.05 ± 0.29[a]	38.34 ± 0.36[a]
3	48.98 ± 0.64[a]	49.53 ± 1.05[a]
5	67.24 ± 0.98[b]	71.2 ± 1.28[a]
7	95.22 ± 2.23[a]	99.6 ± 1.51[a]
9	131.96 ± 2.18[b]	145.45 ± 3.36[a]
17	414.76 ± 4.68[a]	413.51 ± 9.36[a]
24	835.48 ± 7.97[a]	834.41 ± 16.15[a]
31	1,329.04 ± 12.58[a]	1,337.79 ± 18.01[a]
38	1,871.6 ± 18.65[a]	1,889.12 ± 18.00[a]

Treated chicks received recorded hen vocalizations during the first 9 d of life and there was a significant increase in body weight.

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Result

Table 3: Average daily gain of chick for the period of first 9 days.

Day of life	Control	Treated
3	4.97 ± 0.35^{a}	5.6 ± 0.47^{a}
5	9.13 ± 0.47^{b}	10.84 ± 0.35^{a}
7	13.99 ± 1.15^{a}	14.2 ± 0.28^{a}
9	18.37 ± 1.43^{b}	22.93 ± 1.67^{a}

Observation: Behavioural data showed that treated chicks stayed with the distance of 0.6meters of the speaker during or after hens vocalization. Therefore resulting in less energy consumption.

Result

TABLE 4. Feed conversion rate (g/g± standard error of mean) through d 9 of life. Treated chicks are received recorded hen vocalizations during the first 9 d of life

Day of life	Control	Treated
3	1.13 ± 0.03^{a}	1.06 ± 0.03^{a}
5	1.18 ± 0.08^{b}	0.96 ± 0.03^{a}
7	1.44 ± 0.16^{a}	1.36 ± 0.04^{a}
9	1.70 ± 0.20^{b}	1.32 ± 0.09^{a}

^{a,b}Different letters within a row are significantly different ($p \leq 0.05$) between treatments

Result

TABLE 5. Mean proportion (± standard error of mean) within 0.61 m of feeder. Treated chicks received recorded hen vocalizations during the first 9 d of life

Day of life	Control	Treated
1	0.75 ± 0.03^{b}	0.84 ± 0.01^{a}
3	0.81 ± 0.01^{a}	0.83 ± 0.04^{a}
4	0.79 ± 0.01^{b}	0.99 ± 0.03^{a}
8	0.68 ± 0.03^{b}	0.91 ± 0.03^{a}

[a,b]Different letters within a row are significantly different between treatments ($p \leq 0.001$).

Remarks

- Significant improvement in feed conversion in the treated group.
- More energy was channel into growth in the treated group.

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Conclusion

- The rate of feed conversion in chicks receiving hen calls will be substantially increased, leading to improved body weight gain.

- Hen vocalization has an important impact on production as birds may reach market weight sooner or consume less feed or both.

- Hen vocalization at an early age could have a long-lasting positive effect on chicks.

References

- Wauters, A. M., Richard-Yris, M. A. and Talec, N. 2002. Maternal influences on feeding and general activity in domestic chicks. *Ethology* 108: 529–540.

- Woodcock, M. B., Pajor, E. A. and Latour, M. A. 2004. The effects of hen vocalizations on chick feeding behavior. *Poultry science* 83: 1940–1943.


THANK YOU!