

# EFFECT OF NEONATAL MANIPULATION ON BEHAVIORAL DEVELOPMENT IN LABORATORY CATS

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## AIMS

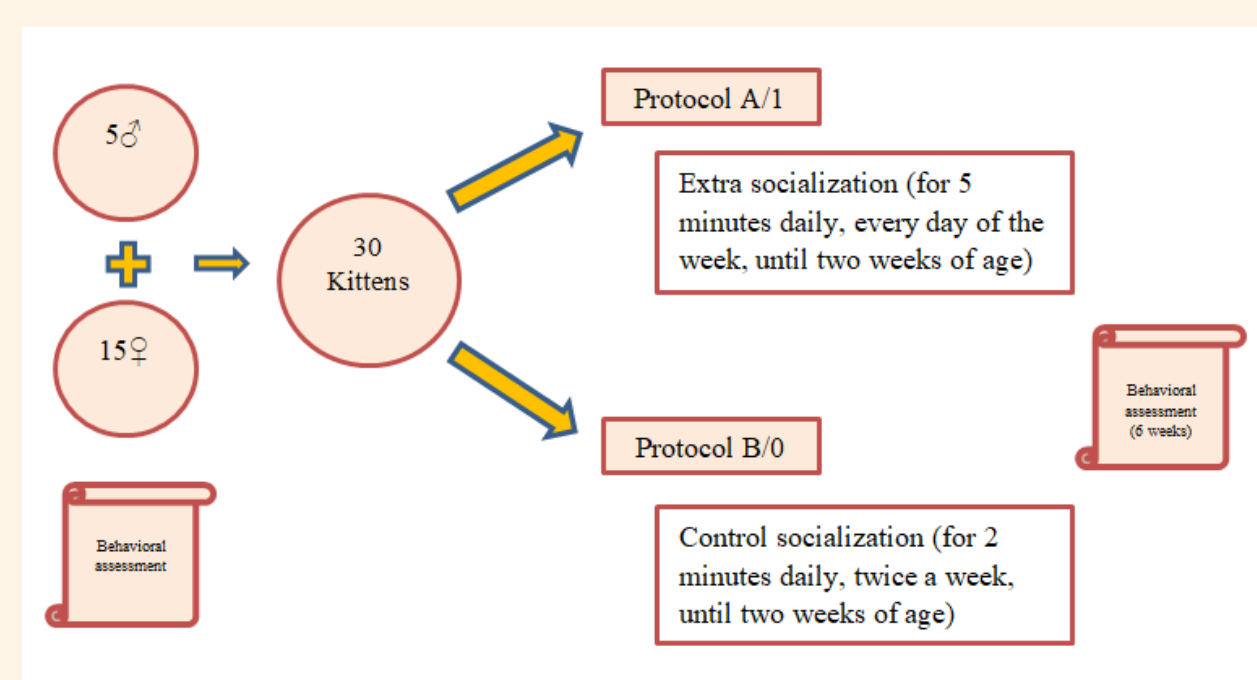
- 1 To know if the extrasocialization plan (in duration and frequency), during the first two weeks of the cats' life, has positive effects on the development of their temperament.
- 2 See the differences in the extra socialization plan of 5 minutes a day/ week compared to one of 2 minutes/ 2 times a week in the first two weeks of life.
- 3 Describe whether or not this positive effect on the development of the character of cats is independent of maternal behavior.
- 4 If it is objectified that the mother's behavior conditions the newborn's behavior, describe how this influence translates into the character of the offspring.

## INTRODUCTION

The behavior of cats depends largely on three conditions: their genetics, the temperament of parents (maternal and paternal) and stimuli by external factors. This experimental, longitudinal strategy study aims to test whether or not human manipulation (as an external factor) causes a positive effect on the future behavior of socialized kittens during the first two weeks of life, with an extra protocol. And at the same time find out the importance and influence of maternal temperament on that of their offspring.

## METHODOLOGY

Studied species: *Felis catus*  
Breed: European Shorthair  
Category: SPF Cats (Isoquimen S.L.)



Scheme of the methodology. Own source.

	Puntuació	Recapte total
Tendresa	1 2 3 4	
Acceptació de premis tòctics	1 2 3 4	
Resposta a la immobilització	1 2 3 4	
Excitabilitat	1 2 3 4	
Agressió envers altres gats	1 2 3 4	
Agressió envers les persones	1 2 3 4	
Permet ser acarolat al nu	1 2 3 4	

Table of individual behavioral assessments. Own source.

## RESULTS AND ANALYSIS

Ventrada	Mare	Temperament_cria	Temperament_mare	Temperament_pare	Tractament
c1	Vaqueta	9,25	9,5	12,2	1
c2	It	9,766666667	9,5	12,2	1
c3	Eva	13,15	7	12,2	1
c4	Chaplina	16,5	16	11,6	0
c5	Sorry	14,1	21,5	11,4	1
c6	Jenny	9,5	10,9	13,75	1
c7	Indiana	11,9	8,6	14	0
c8	Jaguar	11,12	7,7	16	0
c9	Hppita	16,3	20	16	0
c10	Ketchup	15,6	22,4	14	0
c11	Mostassa	13,56	22,5	14	1

Averages of behavioral assessments according to litter and parents, classified according to the treatment received. Source of the table, own.



### Analysis of the effect of socialization treatment on kitten temperament

Wilcoxon Scores (Rank Sums) for Variable temperament_cria Classified by Variable tract				
tract	N	Sum of Scores	Expected Under H0	Std Dev Under H0
1	17	205.0	263.50	23.885888
0	13	260.0	201.50	23.885888

Wilcoxon Two-Sample Test					
Statistic (S)	Z	Pr > Z	Pr >  Z	t Approximation	Exact
260.0000	2.4282	0.0076	0.0152	0.0108	0.0066

Kruskal-Wallis Test		
Chi-Square	DF	Pr > ChiSq
5.9983	1	0.0143

Statistically significant difference (with  $p = 0.014$  and therefore  $< 0.05$ ). Mann-Whitney Wilcoxon test.

### Correlation between kitten temperament and maternal temperament

The CORR Procedure						
5 Variables: temperament_cria temperament_mare temperament_pare						
Simple Statistics						
Variable	N	Mean	Std Dev	Median	Minimum	Maximum
temperament_cria	11	12.79515	2.60231	13.15000	9.25000	16.50000
temperament_mare	11	14.14545	6.37799	10.90000	7.00000	22.50000
temperament_pare	11	13.60000	1.80222	14.00000	11.40000	16.00000

Spearman Correlation Coefficients, N = 11				
Prob >  r  under H0: Rho=0				
temperament_cria	temperament_mare	temperament_pare	temperament_cria	temperament_mare
1.00000	0.53759	-0.17764	-0.17764	0.6013
0.53759	1.00000	-0.04685	-0.04685	0.8912
0.0881	-0.04685	1.00000	-0.04685	0.8912

Significant positive correlation ( $r = \pm 0.53759$ ,  $p = 0.0881$ ). Spearman correlation.

Data analysis was performed using two types of methods with the statistical program SAS (Statistical Analysis Software) with the help of the UAB Department of Animal and Food Science.

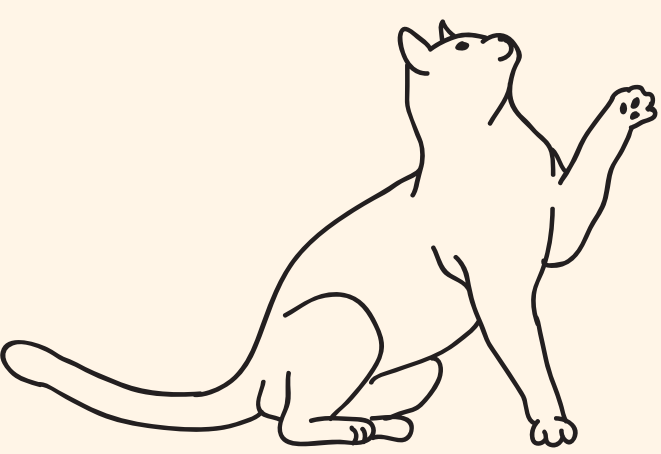
## DISCUSSION

Through this work it can be concluded that, as postulated in the objectives of the same, the difference between receiving or not receiving extra socialization during the first two weeks of life is statistically significant ( $p = 0.014$ ). Therefore, it can be stated that the temperament of cats varies depending on the type of socialization, also during this initial period. How they corroborate studies in rodents (Liu D et al. 1997) (Anisman et al. 1998).

Regarding the existence or not of correlation between the temperament of the parents and that of the offspring, Through this project, it has been objectified by means of the correlation of Spearman that according to the results there is a positive tendency between both temperaments, so that the mother's condition conditions that of her litter ( $p = 0.0881$  and therefore  $< 0.1$ ). As documented by other authors. (Bradshaw 1992) (Manteca 1996) (Guardini et al. 2016).

## REFERENCES

- Anisman H, Zaharia MD, Meaney MJ, Merali Z. 1998. Do early-life events permanently alter behavioral and hormonal responses to stressors? Int J Dev Neurosci. 16(3-4):149-164. doi:10.1016/S0736-5748(98)00025-2.
- Bradshaw JWS. 1992. The Behaviour of the Domestic Cat. First. Wallingford: CABI Publishing.
- Guardini G, Mariti C, Bowen J, Fatjó J, Ruzzante S, Martorell A, Sighieri C, Gazzano A. 2016. Influence of morning maternal care on the behavioural responses of 8-week-old Beagle puppies to new environmental and social stimuli. Appl Anim Behav Sci. 181:137-144. doi:10.1016/j.applanim.2016.05.006. http://dx.doi.org/10.1016/j.applanim.2016.05.006.
- Liu D, Diorio J, Tannenbaum B, Caldji C, Francis D, Freedman A, Sharma S, Pearson D, Plotsky PM MM. 1997. Maternal Care, Hippocampal Glucocorticoid Receptors, and Hypothalamic-Pituitary-Adrenal Responses to Stress. Science (80- ).1:1659-62. doi:10.1126/science.277.5332.1659.
- Manteca X. 1996. Etologia clínica veterinaria del perro y del gato. 3a edició. S.A. GI-M, editor. Sant Cugat del Vallès.



## CONCLUSIONS

- Extra socialization during the neonatal period is beneficial in the future temperament of kittens.
- In this project the influence of the maternal character in the conduct of its litter is ratified.
- A better temperament of laboratory kittens involves:
  - Improving their animal welfare (ethically essential).
  - It facilitates tasks in research laboratories that use this animal model.
  - Reduction of stress that may interfere with the results of studies.