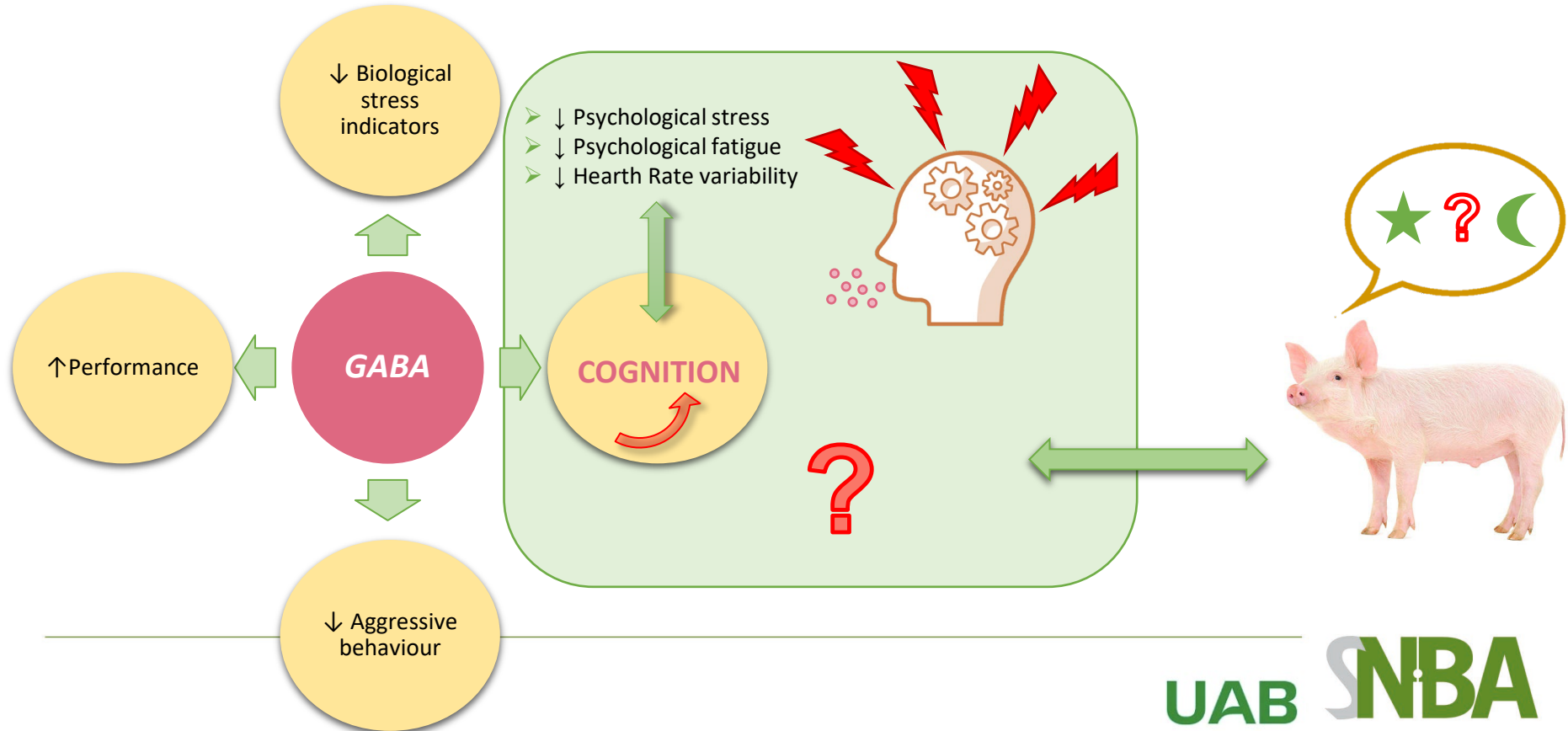




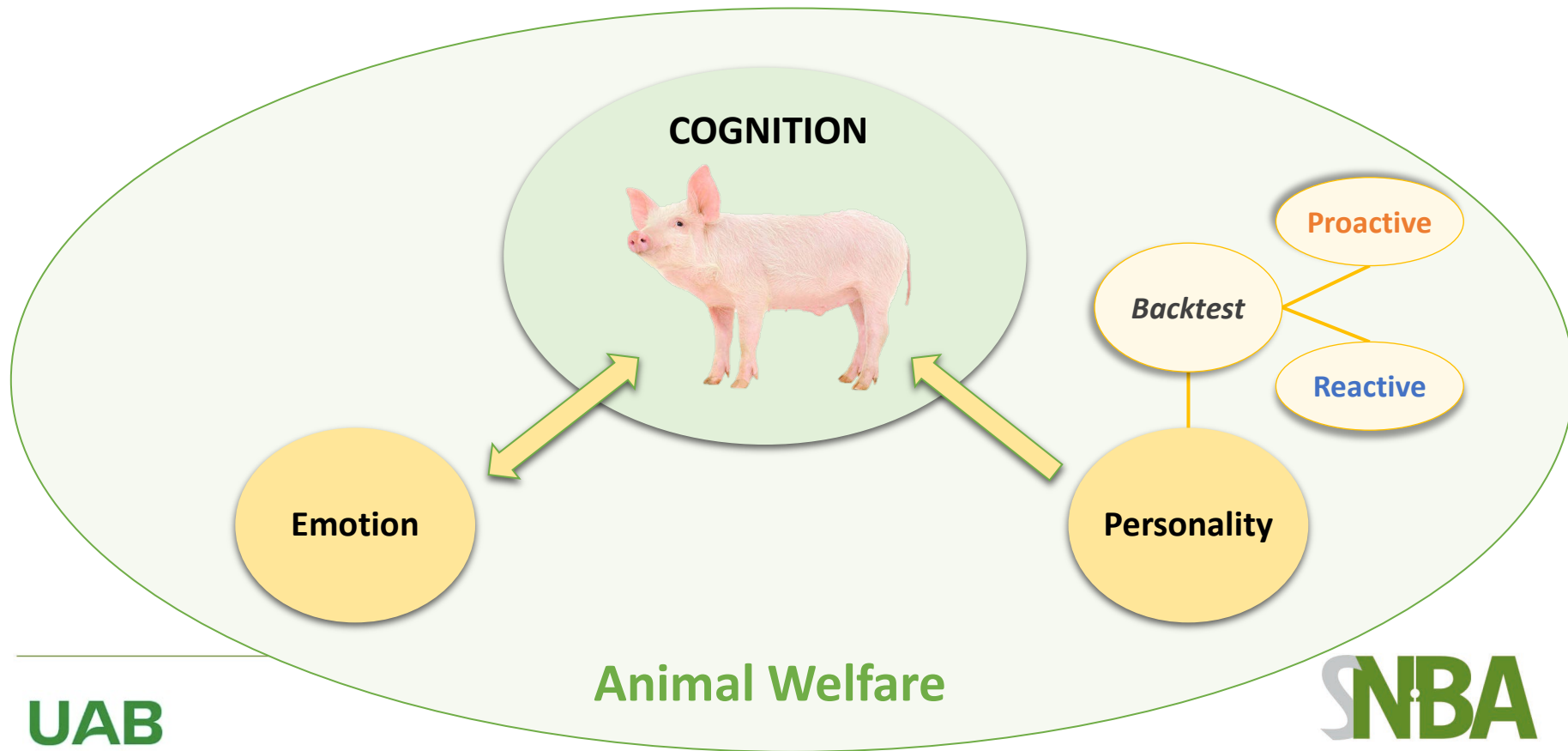
DIETARY GABA SUPPLEMENTATION IN NURSERY PIGS CAN IMPROVE OBJECT RECOGNITION MEMORY REGARDLESS OF THEIR COPING STYLE

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Introduction

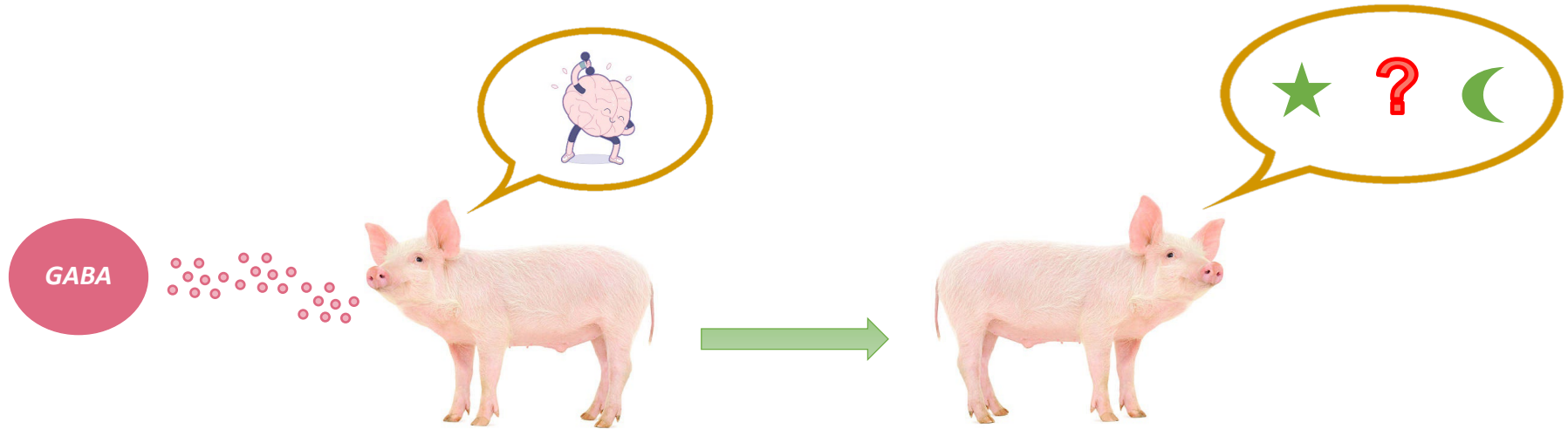


Introduction

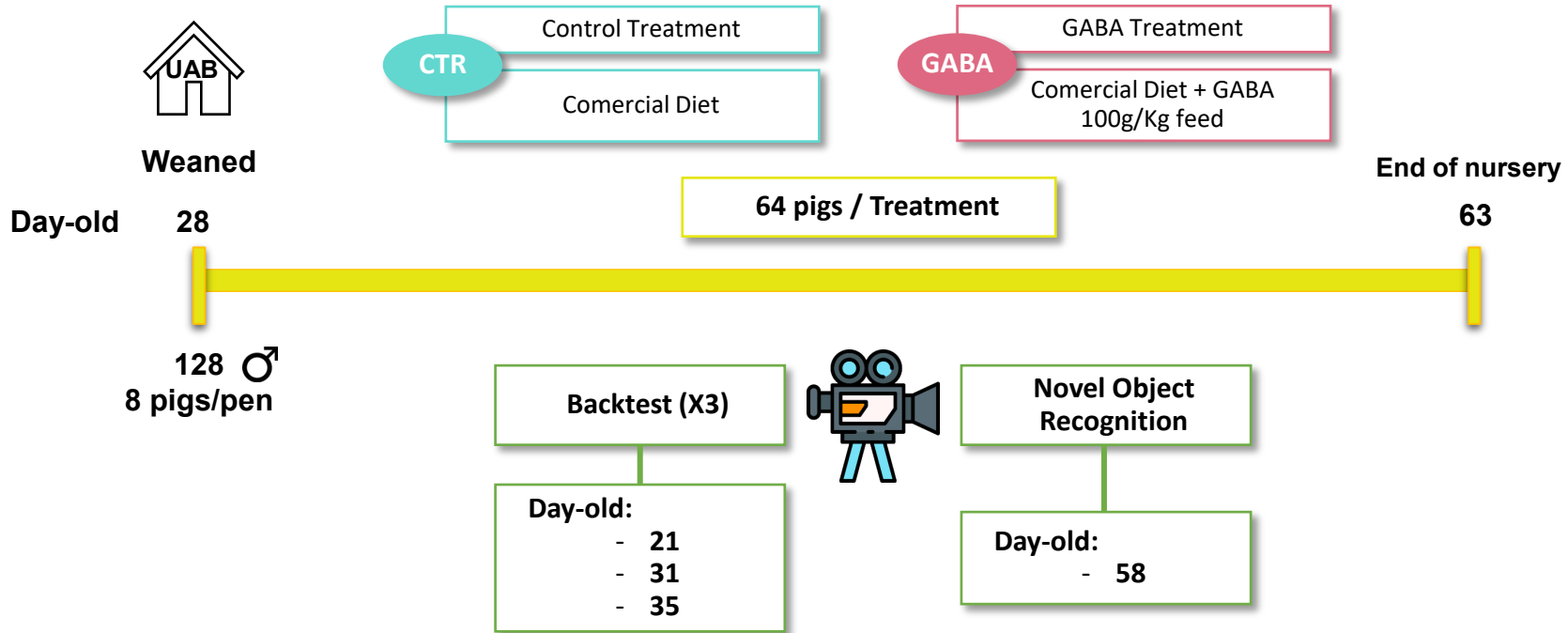


Hypothesis and Objective

Explore the effect of dietary GABA supplementation on the pig's memory through novel object recognition test



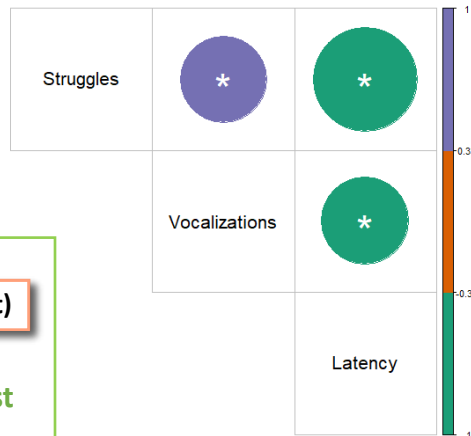
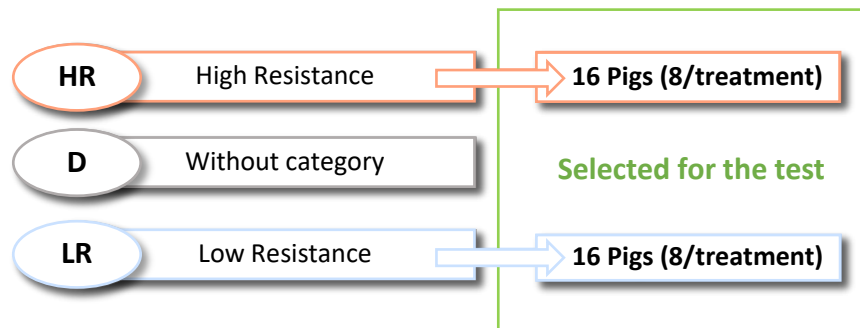
Materials and Methods



Materials and Methods

Backtest

- Number of struggles
- Latency to first struggle
- Number of Vocalizations



	HR	LR	P-Value
Number of Struggles	2.9±0.12	0.7±0.11	<0.001
Latency to first Struggle	20.2±2.86	44.5±2.77	<0.001
Number of Vocalizations	18.6±1.42	5.2±1.37	<0.001



Materials and Methods

Novel Object Recognition

Identical Sample Object

10 minutes



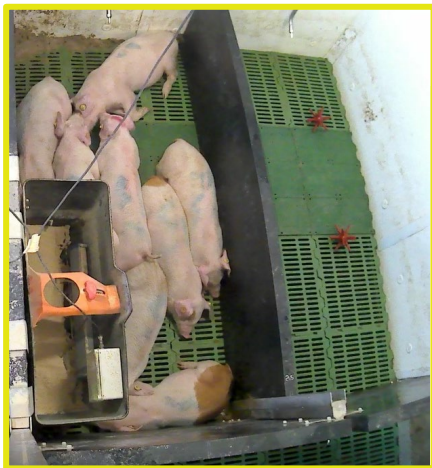
Pig with its pen-mates

10 minutes

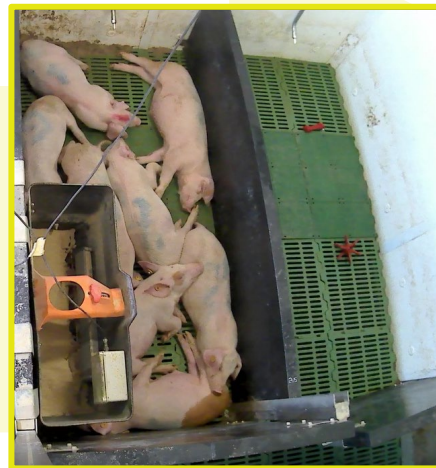


Sample object and Novel Object

10 minutes



Phase 1

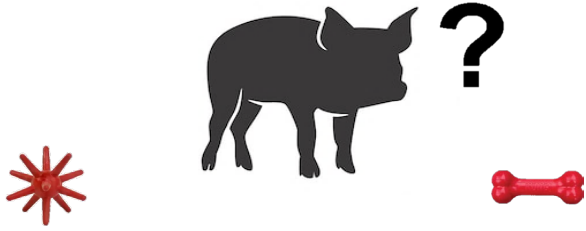


Phase 2

Materials and Methods

Novel Object Recognition: Behaviour measured in seconds and expressed as percentages

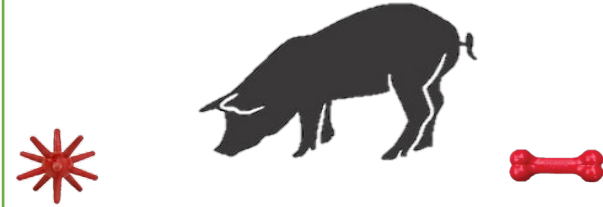
Latency to touch



Touching the object



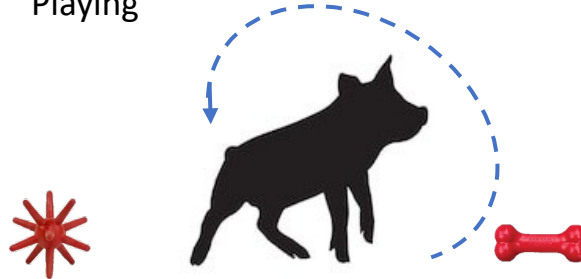
Exploring Away the object



Laying Away the object



Playing

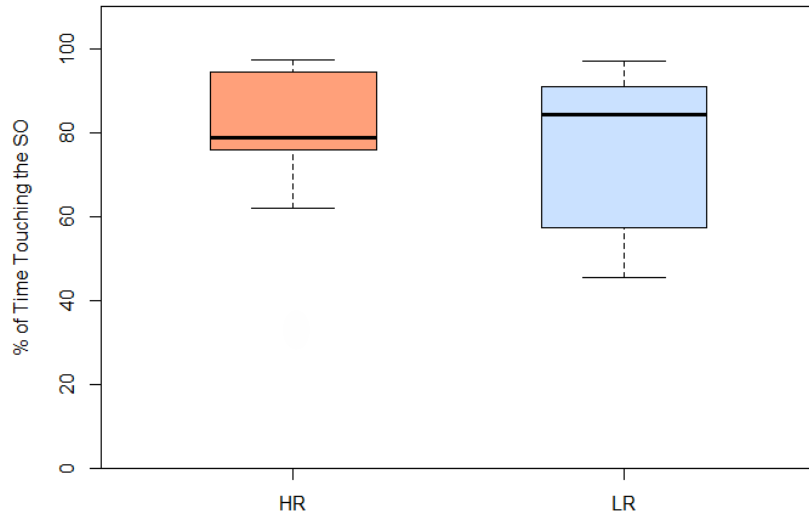


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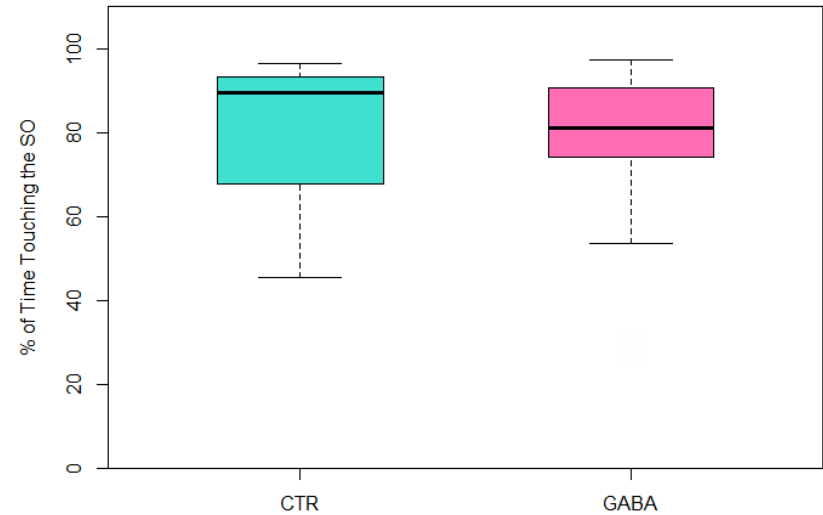


Results: Phase 1

Percentage of time the pigs spent touching the sample object



Backtest

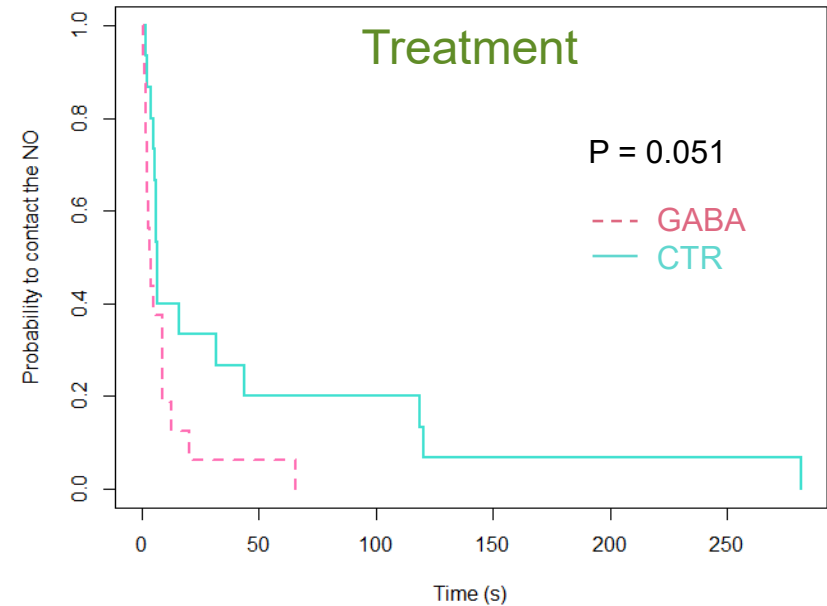
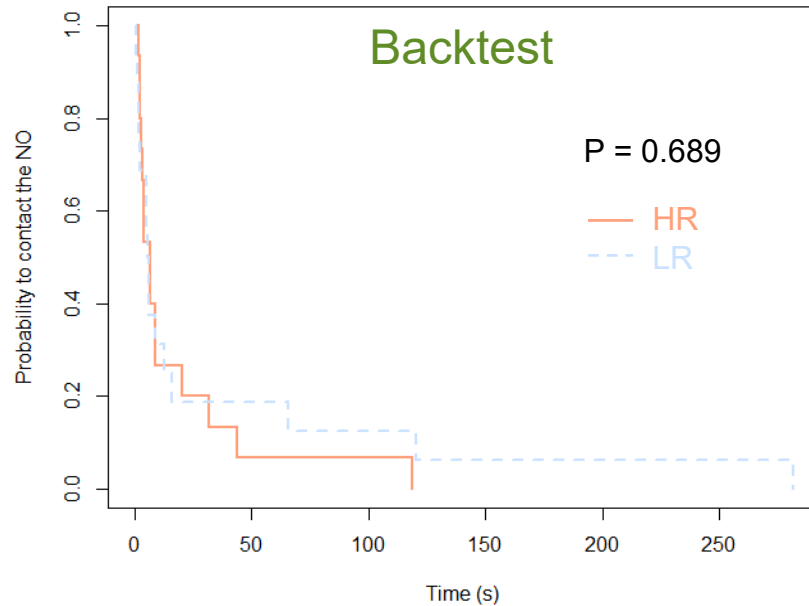


Treatment

$P > 0.1$

Results: Phase 2

Survival curve of pigs' latencies to contact the novel object



Results: Backtest

Phase 2

Time (%)	HR	LR	P-Value
Touch NO	54.2±3.94	41.7±3.81	0.034 ¹
Touch SO	15.9±2.29	12.4±2.21	0.278 ¹
Lying Away	0 (0-0)	0 (0-11.4)	0.143 ²
Exploring Away	6.8 (4.1-9.1)	4.3 (1.4-11.6)	0.626 ²
Play	0 (0-0)	0(0-1.7)	0.175 ²

High-Resistance pigs...

- ↑ time touching the novel object
- ↑ time investigating both objects during the test

...than the Low-resistance pigs

- **The recognition index did not differ from that of low-resistance pigs**

INDEX	HR	LR	P-Value ¹
D1 (<i>Time NO-Time SO</i>)	38.3±4.41	29.3±4.26	0.166
D2 (<i>Time NO+Time SO</i>)	70.1±4.71	54.1±4.55	0.023
Recognition (<i>D1/D2</i>)	0.55±0.064	0.54±0.062	0.918

¹ = Marginal mean ± SE; ANOVA

² = Median (IQR 25% - 75%); U de Mann-Whitney

Results: Treatment

Phase 2

Time (%)	GABA	CTR	P-Value
Touch NO	55.4±3.81	40.5±3.94	0.009 ¹
Touch SO	10.0±2.21	18.3±2.29	0.016 ¹
Lying Away	0 (0-11.30)	0 (0-0)	0.488 ²
Exploring Away	5.2 (1.8-8.9)	7.1 (3.2-10.2)	0.470 ²
Play	0.08 (0-2.1)	0 (0-0)	0.024 ²

Frequency (n)	GABA	CTR	P-Value
Touch NO	12.4±1.23	10±1.27	0.191 ¹
Touch SO	6.7±0.96	8.5±0.99	0.241 ¹
Lying Away	0 (0-1)	0 (0-0)	0.486 ²
Exploring Away	5.7±1.10	7.2±1.13	0.367 ¹
Play	0.5 (0-6)	0 (0-0)	0.022 ¹

INDEX	GABA	CTR	P-Value ¹
D1 (<i>Time NO–Time SO</i>)	45.3±4.26	22.2±4.41	0.001
D2 (<i>Time NO+Time SO</i>)	65.4±4.55	58.8±4.71	0.272
Recognition (<i>D1/D2</i>)	0.69±0.062	0.40±0.064	0.003

¹ = Marginal mean ± SE; ANOVA

² = Median (IQR 25% - 75%); U de Mann-Whitney

GABA supplemented pigs...

- ↑ time touching the novel object
- ↓ time touching the sample object
- ↑ time and exhibited more frequent play behaviour
- **Showed a high recognition index**

...than the Control pigs

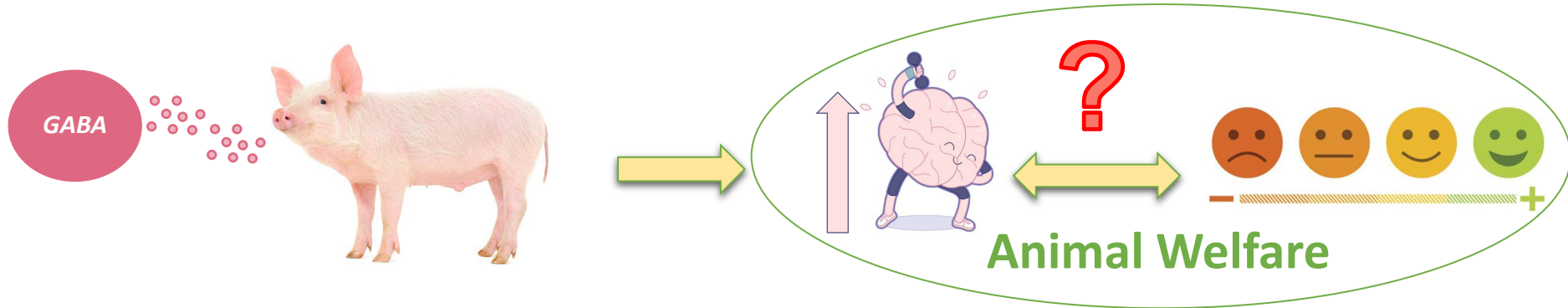
Conclusion

Backtest:

- Coping styles do not differ in discriminating a new object from a familiar one.

Treatment:

- GABA-supplemented pigs showed a preference for exploring the novel object, suggesting a potential positive impact on cognitive function.
- More investigation... ¿?



ANIMAL NUTRITION AND WELFARE SERVICE

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Thank you for the attention!

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