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Ontogeny of personality in roe deer (*Capreolus capreolus*)



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Introduction

Personality is often described as individual differences that are consistent across time and context [1]. Numerous traits are often used to characterize personality, such as sociability, aggressiveness, exploration, boldness and neophobia [2]. The existence of personality in the animal kingdom is not yet admitted by the entire research community, and relatively few studies have investigated the ontogeny of personality [3]. This longitudinal study explored if roe deer (*Capreolus capreolus*) exhibited consistent individual differences (personality) in a neophobic situation, and if said personality evolved throughout the years (fawn to adulthood).

1/ We first hypothesized that roe deer would indeed exhibit consistent individual differences and confirm the existence of personality in this species.

2/ Secondly, we hypothesized that personality would stay consistent across time (both fawns and adults would show unique personality profiles).

Materials and Methods

Experimental setting



Gardouch experimental station, INRA (National Agronomy Research Institute) near Toulouse, France.

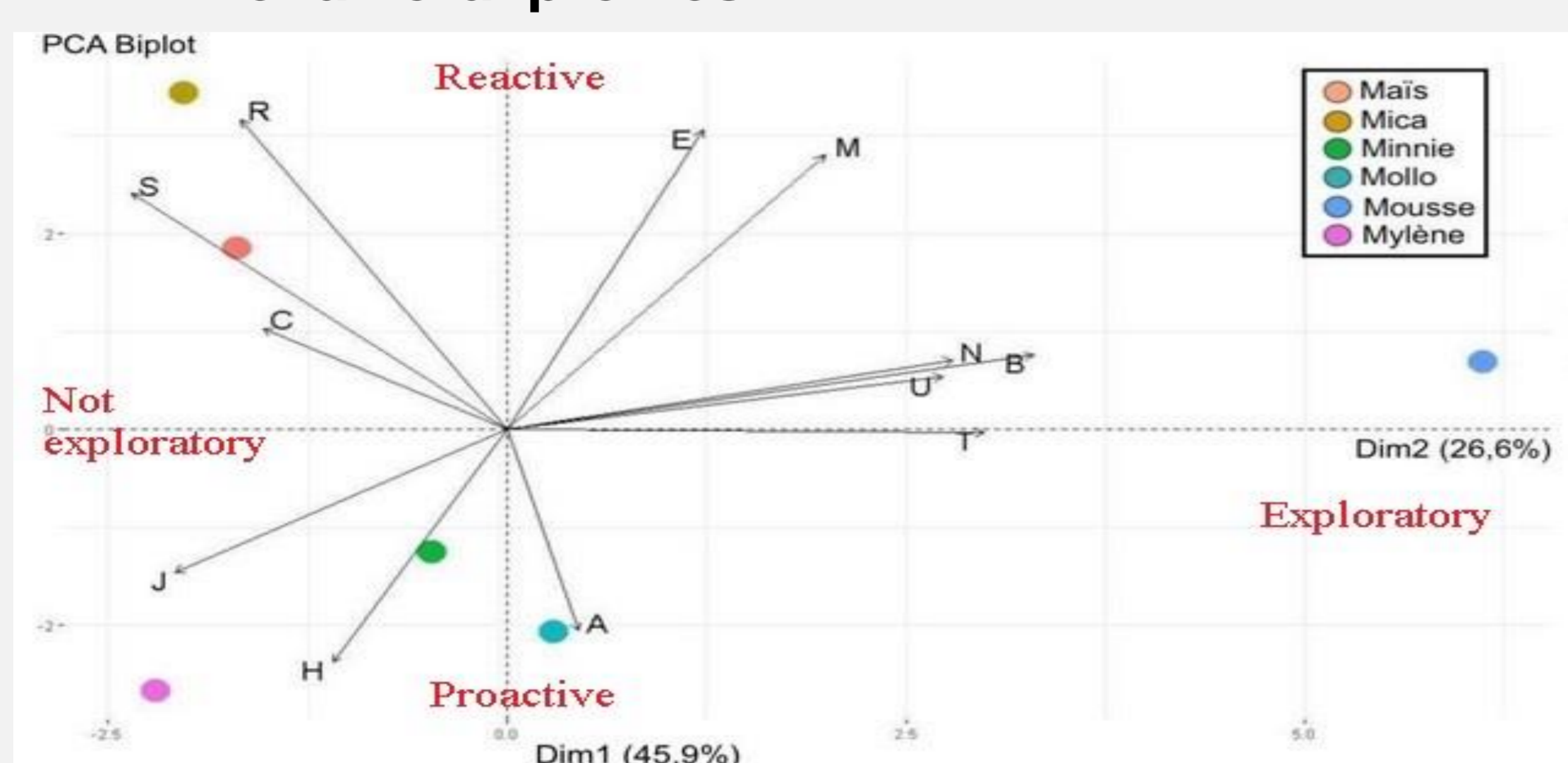
- "Novel object" test : a novel object was placed in a familiar environment
- The behavior of six females was recorded using the "continuous recording" method for 5 minutes.
- Total of 42 videos (6 females, 7 sessions)
- Behavioral repertoire of 18 behaviors

Analyses

- Repeatability of relevant behaviors to neophobia.
- PCA (Principle Component Analysis) to visualize correlations between behaviors and identify potential profiles.
- Comparison of cohort at 1 and 3 years old to show consistency in time.

Results and Discussion

Behavioral profiles



- Axis 2 captures individuals' activity, opposing reactive individuals on its positive pole (avoid stimulus, focus on feeding) and proactive individuals on its negative pole (actively seek to interact with object).
- Repeatability ($R = 0.276$, 95% CI [0, 0.592], $p = 0.008$).

Results confirmed hypotheses as individual differences were found to be **consistent across time** (fawn to adult) and relevant behaviors to neophobia were **repeatable**. Our results suggest that roe deer have different behavioral profiles that are consistent in their lives in relation to their reaction to novelty.

Behavioral tendencies : comparison at 1 and 3 years old.

Subjects	1 year old (2013)	3 years old (2015)
Maïs	Bold – low feeding	Shy
Mica	Shy	Shy
Mollo	Shyest	Shyest
Mousse	Shy	Bold – most vigilant
Minnie	Shy	Bold
Mylène	Boldest – low locomotion	Boldest – low feeding

- Comparison showed that boldest and shyest behavioral profiles stayed consistent over time.

Conclusion

The findings of our longitudinal study of the existence and ontogeny of personality in roe deer exposed to a novel object context show a **time consistency of distinct behavioral profiles** [4]. This experiment is part of a larger ongoing project as multiple cohorts are being tested at 1 and 3 years old both in novel object and isolation context at the CEFS. Roe deer behavior is thus being studied in **different contexts** and at **different life stages** which could bring us an answer on the existence and ontogeny of personality in this species.

References

[1] Sih et al. 2004, *Q Rev Bio*, 79, 241-277
[2] Réale et al. 2007 *Biol Rev*, 82, 291-318

[3] Debeffe 2015 *Anim Behav*, 109, 53-63
[4] Koolhaas 1999 *NeuroSci. Biobehav. Rev.*, 23, 925-935

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