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Acute stress response in sheep of four different identity profiles

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- Sheep need to adapt to their social group modulating social interactions to minimize the biological cost of negative encounters

- Different social strategies have been described that are used by sheep in a group to have access to same resources in a social context.

- Some individuals in the group can behave aggressively to gain priority access to resources, which may increase the risk of injury for them or the other animals in the flock.

- Others members may adopt non-aggressive strategies to increase their chances of survival.

In previous studies, our group defined four major strategies (“personalities”) used by small ruminants living in a stable social group:

- Evasive ewes
- Aggressive ewes
- Affiliative ewes
- Passive ewes



All the ewes of the flock used in the study were assessed following our complex logistic model of clusters .

For details see: Miranda de la Lama, G.C.; Montaldo, H.H.; María, G.A.; Galindo, F. 2011. Social strategies associated with identity profiles in dairy goats, Applied Animal Behaviour Science, 134, 48-55)



Applied Animal Behaviour Science 134 (2011) 48–55



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Social strategies associated with identity profiles in dairy goats

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Gustavo A. María^d, Francisco Galindo^{a,**}

AIM:

Under the hypothesis that the identity profile of a ewe may affect its adaptive response (stress) to a changing environment, we analyze how its acute stress response varies under a routine handling procedure such as shearing.

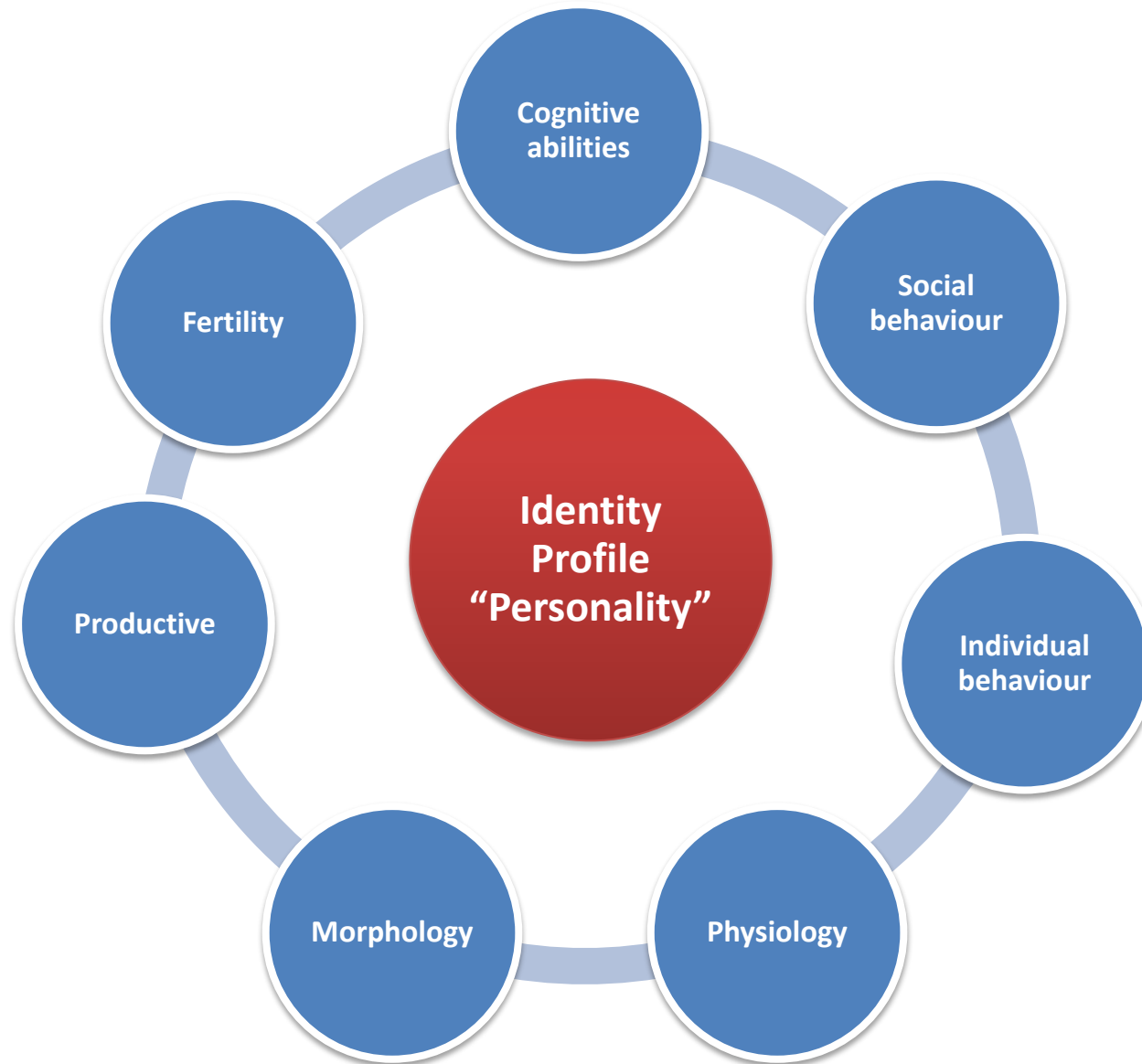
We used sheep with four different identity profiles, from a stable flock of *Roya-Bilbilitana* sheep, categorized in a previous study.



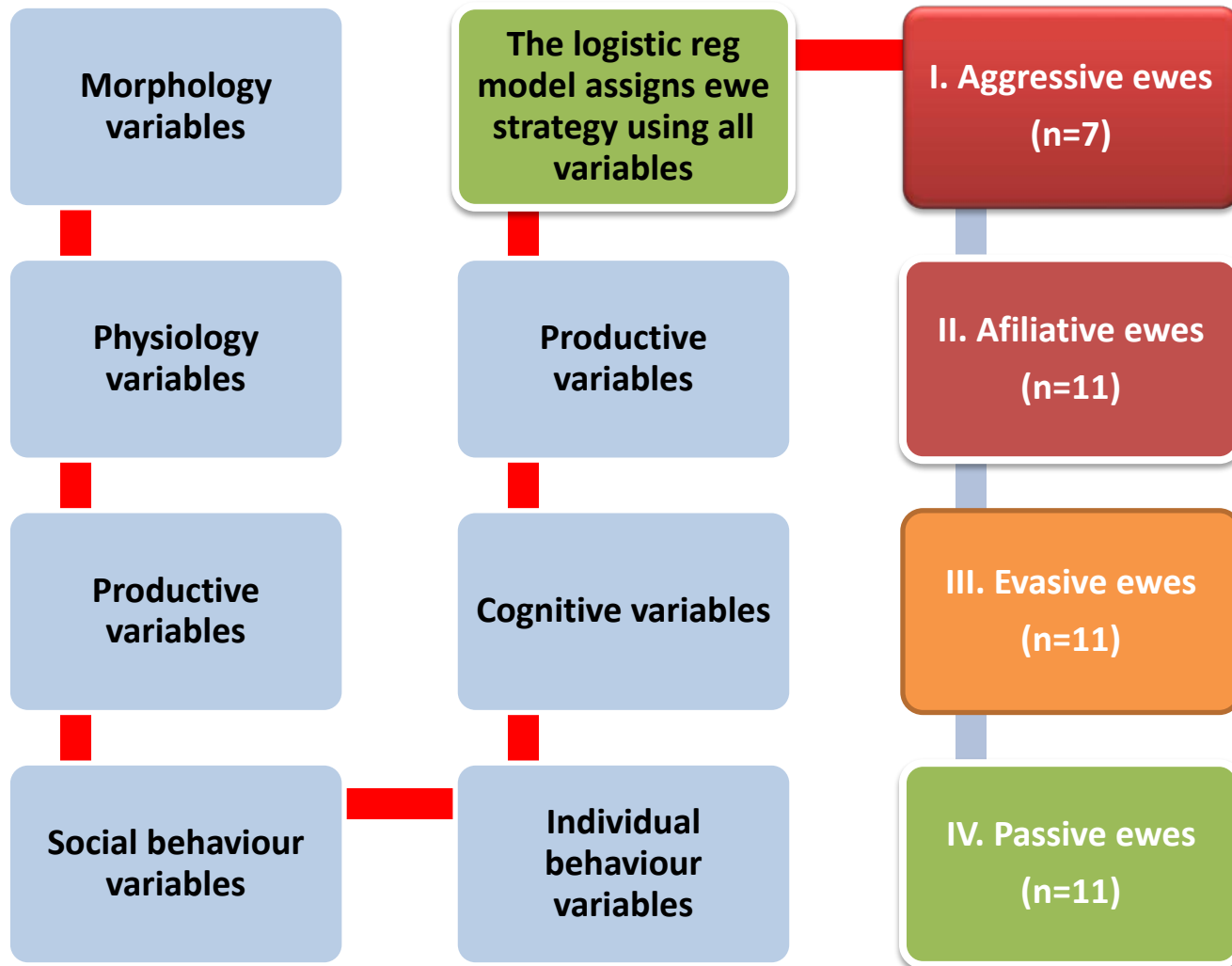
40 Roya Bilbilitana adult ewes
(Celtiberic Spanish native endangered sheep breed)
Stable flock categorized by “personalities” (Identity profile)



Set of variables used in the model to assess identity profiles



Factorial and hierarchical cluster analysis and applying a complex multiple logistic regression model were used to detect the identity profiles (“personalities”) in the social group (see: Miranda de la Lama et al., 2011. *Applied Animal Behaviour Science*, 134, 48-55



Stress response to shearing by personalities



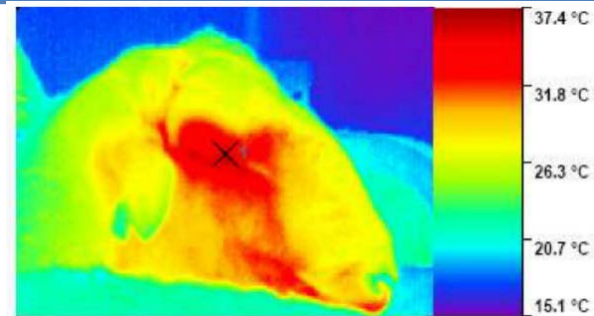
Blood sampling:
-24h and +10 min

Stress response
variables

SHEARING
(11 am)

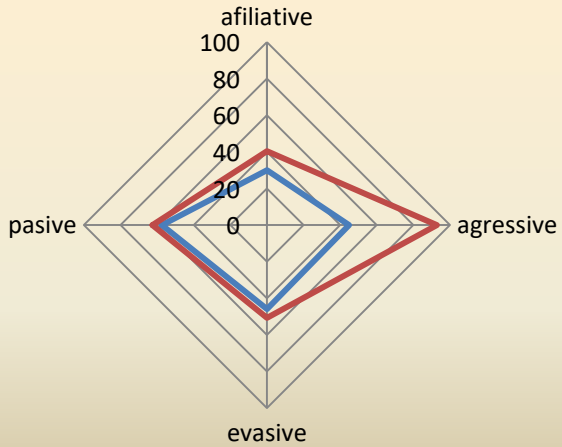
I-bottom inside the ewe
body temp data logger
(DS1921G, ThermoChroni
Device)

Infra Red
Thermography
(Testo 880)



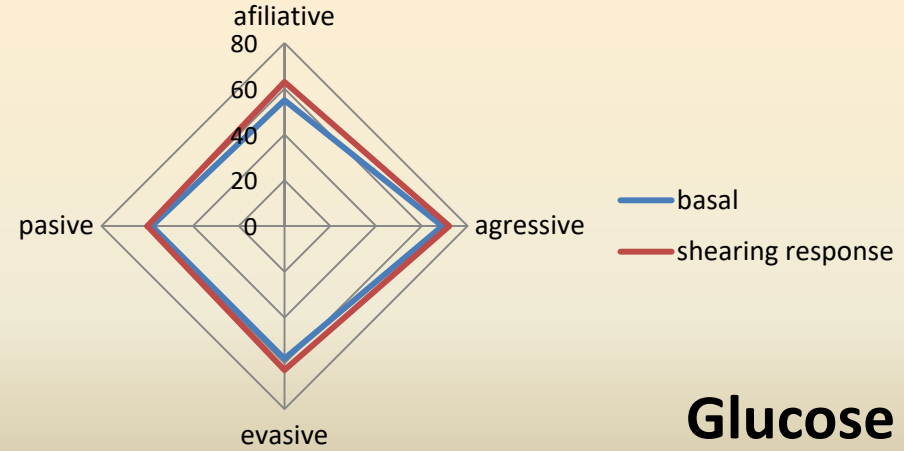
Summary results

Stress response



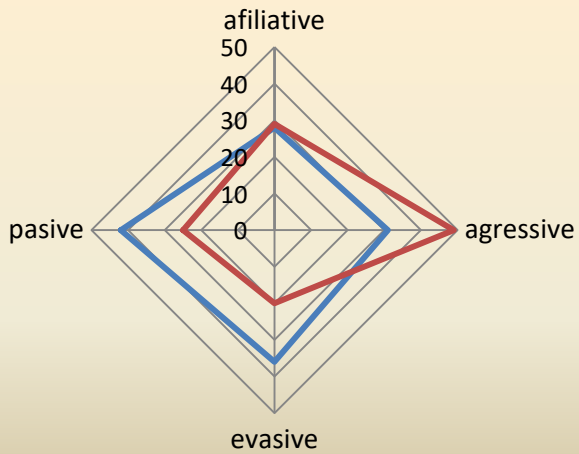
basal
shearing response

Cortisol



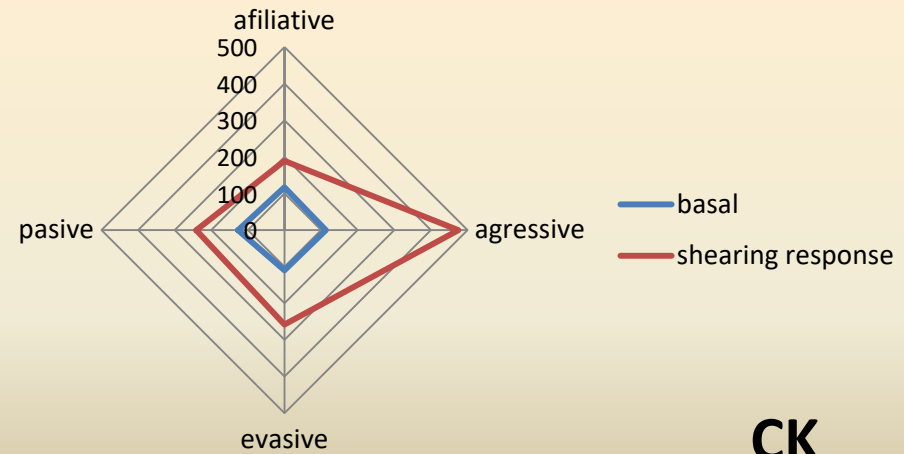
basal
shearing response

Glucose



basal
shearing response

Lactate



basal
shearing response

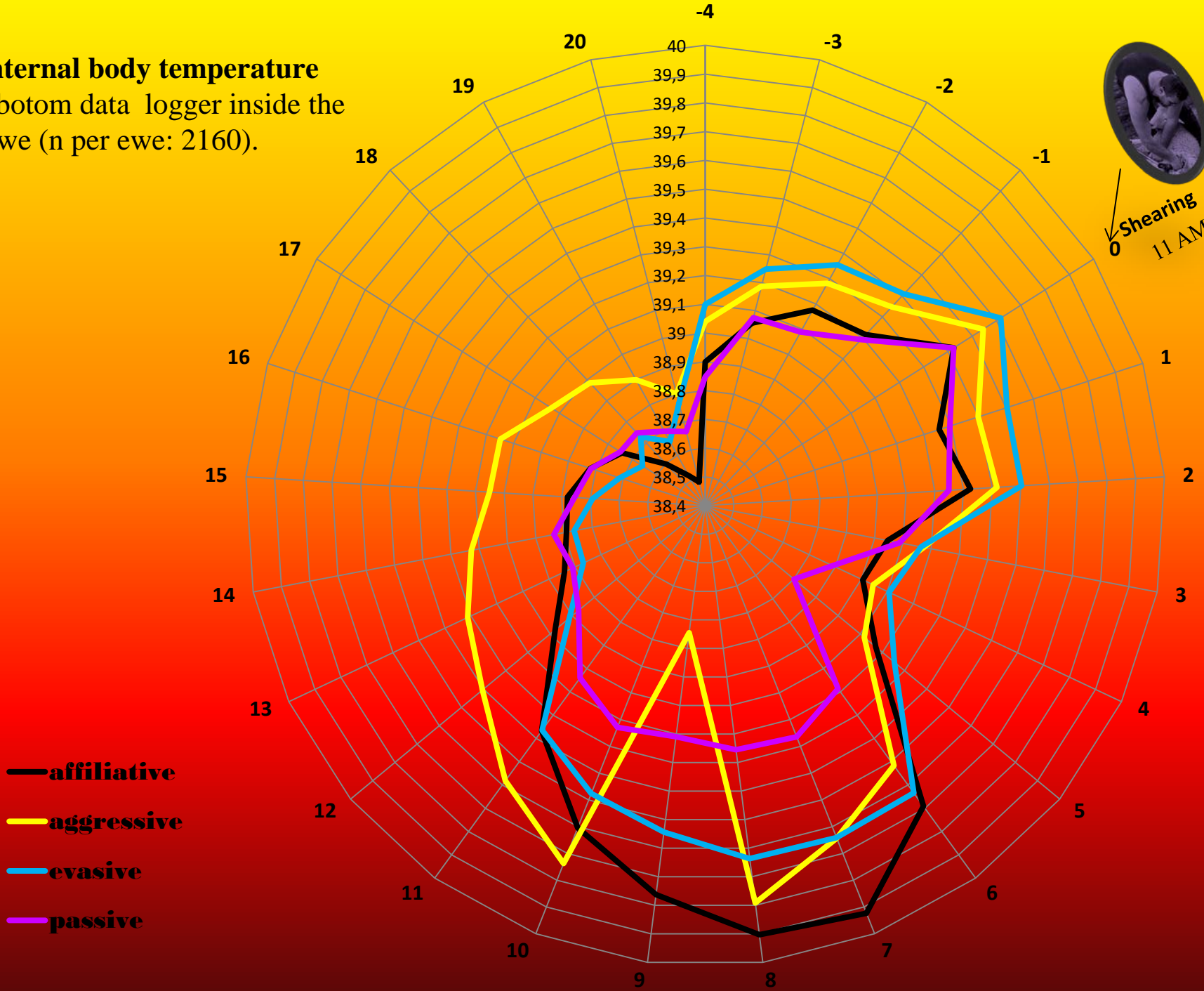
CK

Internal body temperature

I-botom data logger inside the ewe (n per ewe: 2160).



Shearing
11 AM



Conclusions

Aggressive ewes showed the less efficient and “expensive” adaptive response to an acute stressor as shearing

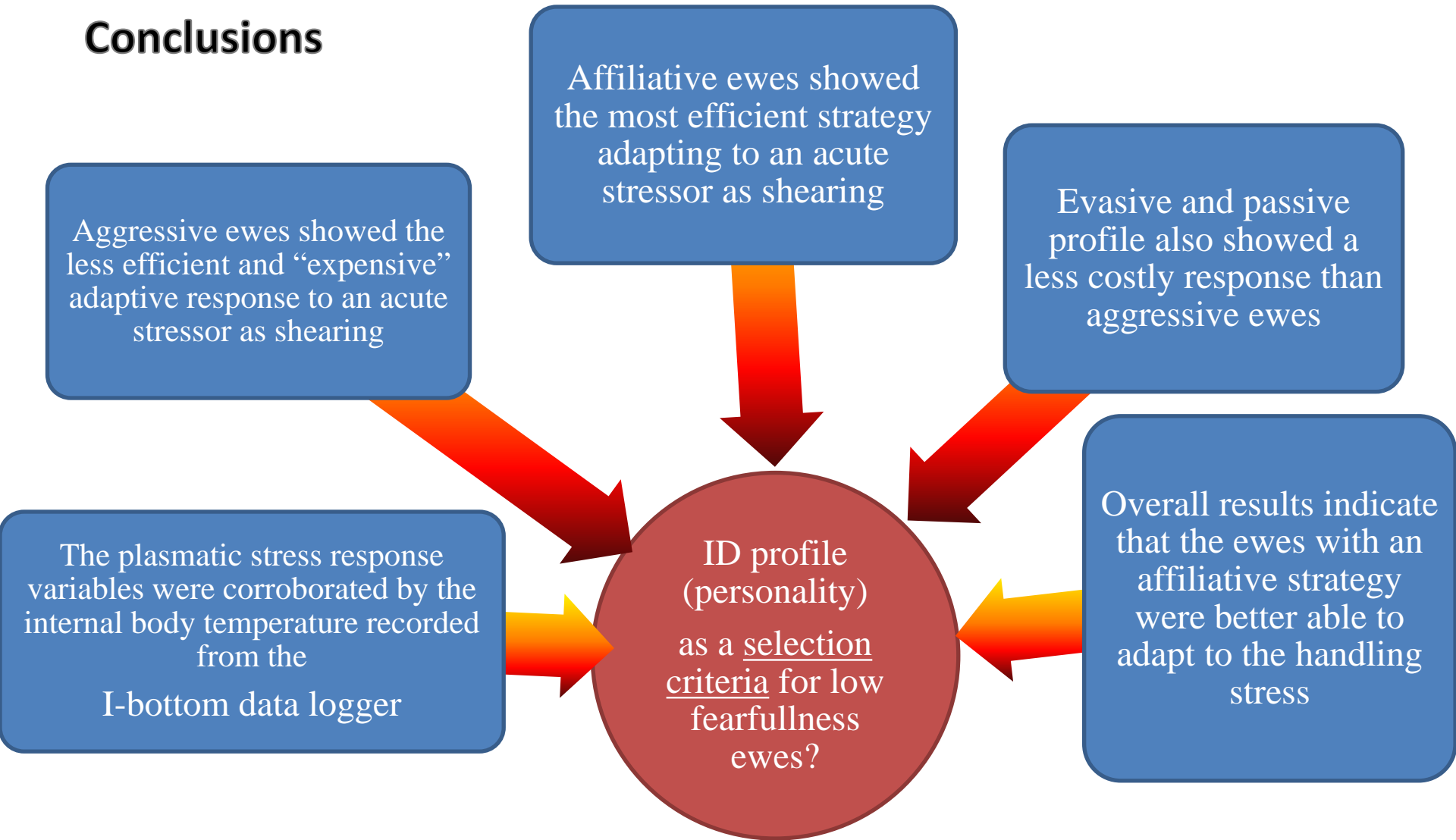
Affiliative ewes showed the most efficient strategy adapting to an acute stressor as shearing

Evasive and passive profile also showed a less costly response than aggressive ewes

The plasmatic stress response variables were corroborated by the internal body temperature recorded from the I-bottom data logger

ID profile (personality) as a selection criteria for low fearfulness ewes?

Overall results indicate that the ewes with an affiliative strategy were better able to adapt to the handling stress





THANK YOU!

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