

Human perception of the vocal expression of emotions in goats

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INTRODUCTION

- **Communication** is at the basis of **intra-** and **inter-specific relationships**
- The correct **interpretation of signals** emitted by animals is fundamental to **understand their needs and emotions**, and thus to establish and maintain a **good human-animal relationship**
- **Vocalisations** are behavioural expressions of **emotions**
(**source-filter theory**; Briefer et al., 2023; Schnaider et al., 2022; Marx et al., 2001; Dwyer, 2008; Filippi et al., 2017; Briefer et al., 2015; Greenall et al., 2022)



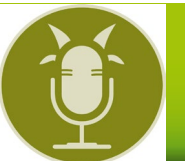
What's in a bleat?



- To what extent are humans able to interpret goat vocalisations and to identify their underlying emotions?
- Is this ability affected by previous experience with goats, level of empathy or other individual characteristics?



To enhance the ability of humans to communicate with goats and to improve the quality of the human-goat relationship in the many different situations (e.g., farms, pet farms, city farms, schools, sanctuaries, institutions for disabled people, and private settings) in which such relationship may take place



DATA COLLECTION

Online questionnaires

- Section 1: description of the project and informed consent
- Section 2: general questionnaire on respondents' characteristics and empathy with animals (goats)
- Section 3: listening of 4 bleats emitted in different contexts → qualitative description using 8 descriptors and association with the emission context:

1) I will almost always get in a good mood when I see healthy and happy goats (+)
 2) It is silly to become attached to a goat (-)

3) I am amazed by how upset some farmers become when they see a goat (-)
 4) It upsets me to see and hear about goats that are sad

ANSWERS ON A LICKERT SCALE: 1 (TOTAL DISAGREEMENT) - 7 (TOTAL AGREEMENT)

EMPATHY SCORE → 3 CLASSES (based on total score)

Low empathy (<19)
 Medium empathy (19<21)
 High empathy (>21)

Pre-partum labour
 Mother-kid separation
 Mother-kid reunion
 Waiting for feed

NEGATIVE VALENCE
 POSITIVE VALENCE

> duration
 > amplitude modulation
 < duration
 < amplitude modulation

Humans' ability to interpret goat vocalisations

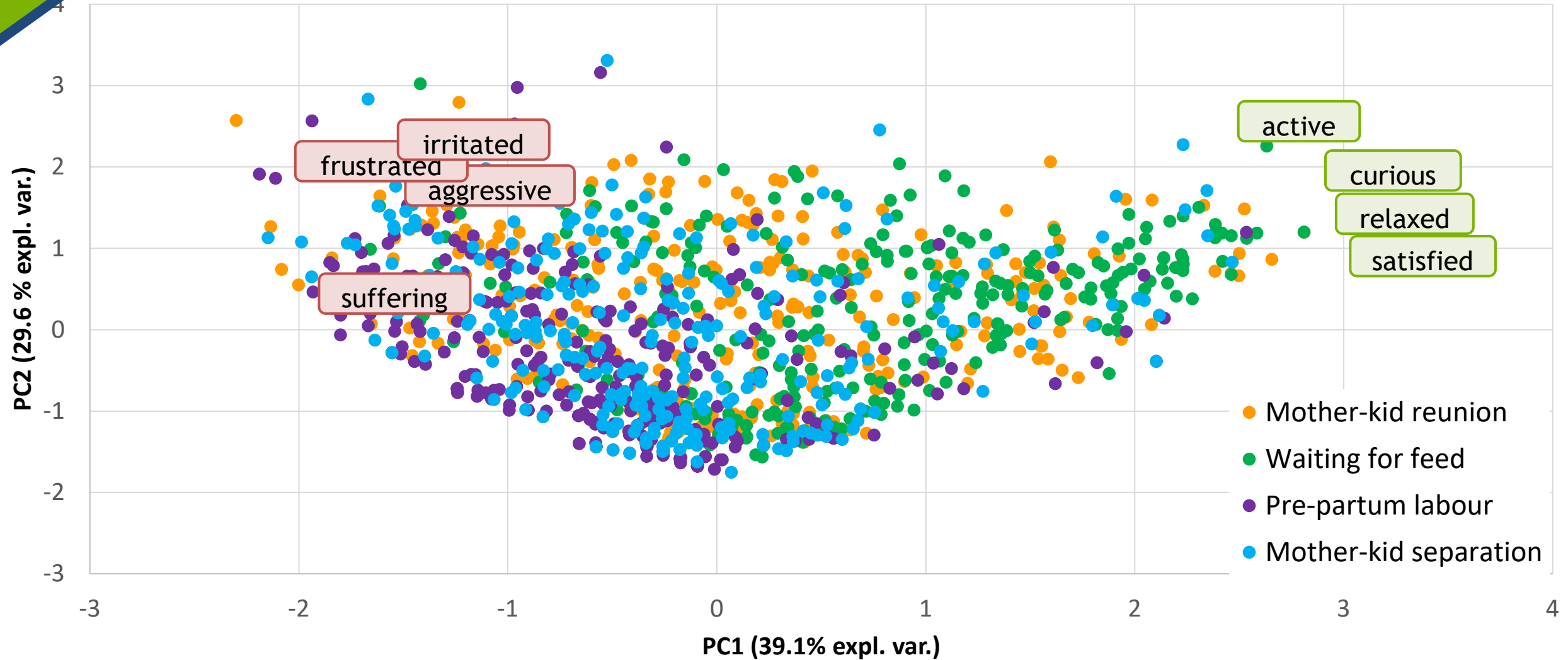
TRUE CONTEXT

		ASSIGNED CONTEXT			
		Pre-partum labour	Mother-kid separation	Mother-kid reunion	Waiting for feed
Pre-partum labour		224 (77.24%) ^{***}	25 (8.62%)	27 (9.31%)	14 (4.83%)
Mother-kid separation		26 (8.97%)	172 (59.31% ^{***})	57 (19.7%)	35 (12.07%)
Mother-kid reunion		44 (15.17%)	59 (20.30%)	72 (24.83%)	115 (39.66%)
Waiting for feed		4 (1.38%)	38 (13.10%)	110 (37.93%)	138 (47.59% ^{***})

^{***} Significantly above chance level (Chi-square test; $p < 0.001$)



Humans' ability to identify goat emotions



Logistic Regression Analysis

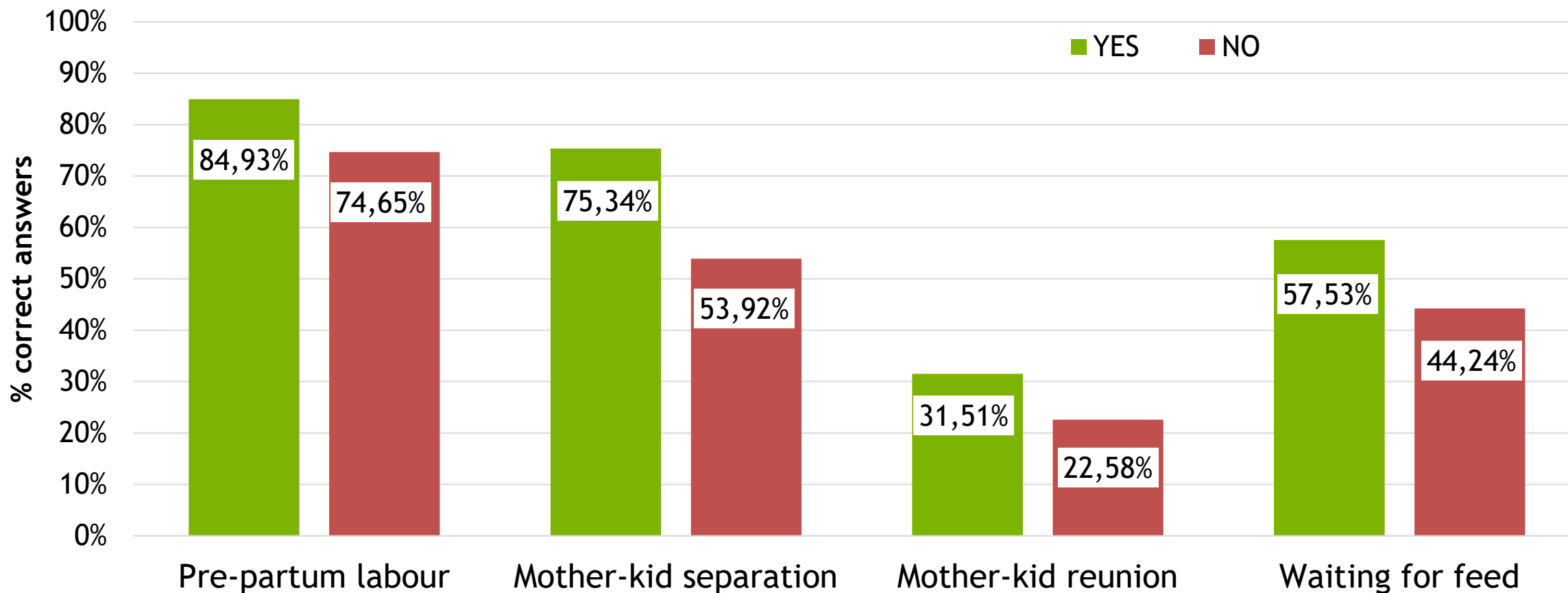
(stepwise backward multiple regression method, with an input and output significance of 0.2)

	Pre-partum labour	Mother-kid separation	Mother-kid reunion	Waiting for feed
Experience with goats	X	X	X	X
Empathy class	X	-	-	-
Gender	-	-	-	X
Age class	-	-	-	-
Marital status	-	-	-	-
Children	X	-	-	-
University education	-	-	-	X
Type of university education	-	-	-	-
Grown up with pets	-	-	-	-
Currently living with pets	X	-	-	X



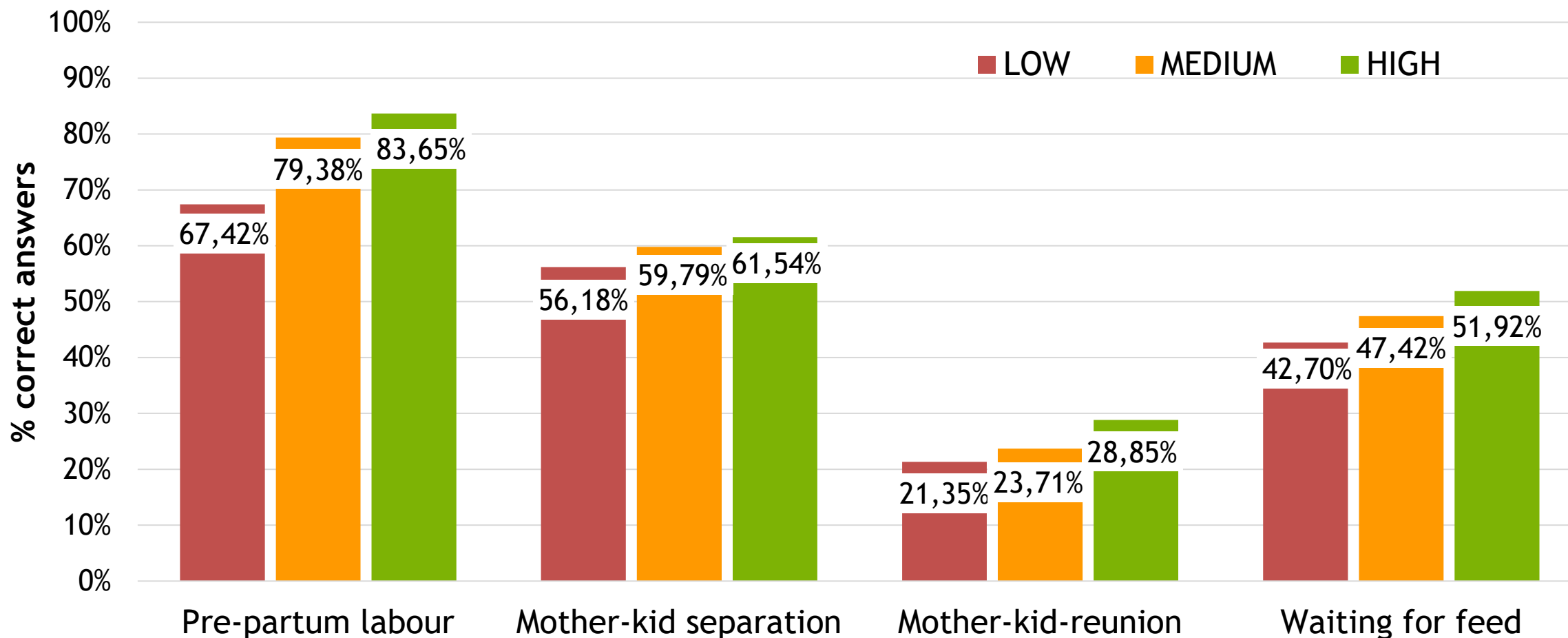
Factors affecting humans' ability to interpret goat vocalisations

EXPERIENCE WITH GOATS



Factors affecting humans' ability to interpret goat vocalisations

EMPATHY WITH GOATS



CONCLUSIONS

- Respondents were able to correctly discriminate the bleats significantly above the chance level for three out of four emission contexts and the emotions scored by the respondents were coherent with the context of emission
- Negative contexts were easier to identify → more important to communicate!
- Experience with goats is consistently related to a higher correct classification rate → to ensure good welfare levels, the presence of experienced handlers is important in all contexts, including farms, pet farms, city farms, schools, sanctuaries, institutions for disabled people, and private settings
- High empathy with goats seems to facilitate context recognition → the role of empathy and attitudes and their underlying factors deserve further investigation



ONGOING RESEARCH ON EMPATHY AND ATTITUDE

Farmers, technicians and veterinarians who work with goats

People with no frequent direct contacts with goats



**THANK
YOU!**



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