



Reliability of different behavioural tests on growing pigs on-farm

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Analyse reaction of animals in standardised settings

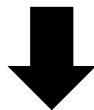
Behavioural tests

Genetics (character traits)

Emotional state

Effectiveness of medical treatment

Suitability for animal welfare assessment? → Inclusion in Welfare Quality[®] protocols



On-farm reliability assessment of different behavioural tests in growing pigs



Behavioural tests

3/13

**Behavioural
tests**

Novel Object (NOT)



Behavioural tests

Latency time

Category 0	No reaction
Category 1	Visual attention
Category 2	Movement towards object
Category 3	Contact
Category 4	Flight

Novel Object (NOT)



Human Animal Relationship (HART)



Behavioural tests

Category 0	No reaction
Category 1	Visual attention
Category 2	Interaction, following
Category 3	Flight/panic
Category 4	Others

Novel Object (NOT)



Human Animal Relationship (HART)



Behavioural tests

Forced Human Approach (FHAT)



Category 1	Flight $\geq 1\text{m}$
Category 2	Flight $< 1\text{m}$
Category 3	Touching snout/head
Category 4	Touching neck, behind ears

Novel Object (NOT)



Human Animal Relationship (HART)



Behavioural tests

Forced Human Approach (FHAT)



Voluntary Human Approach (VHAT)



Latency time

Behavioural tests

Novel Object (NOT)



Human Animal Relationship (HART)



Behavioural tests

Forced Human Approach (FHAT)



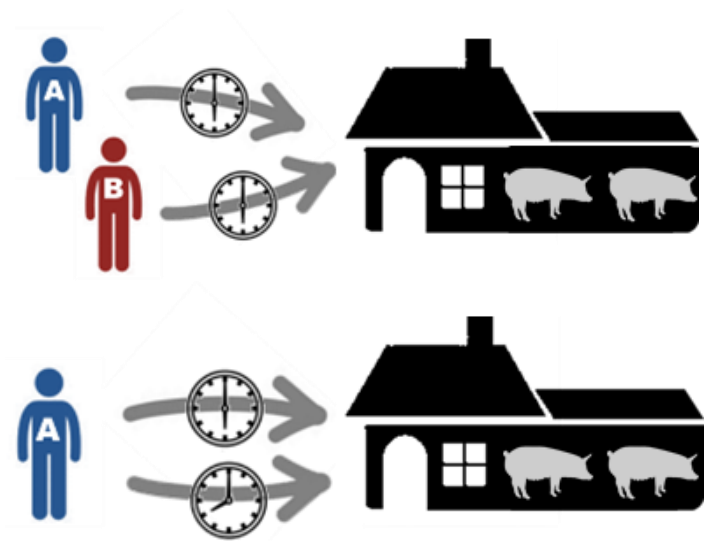
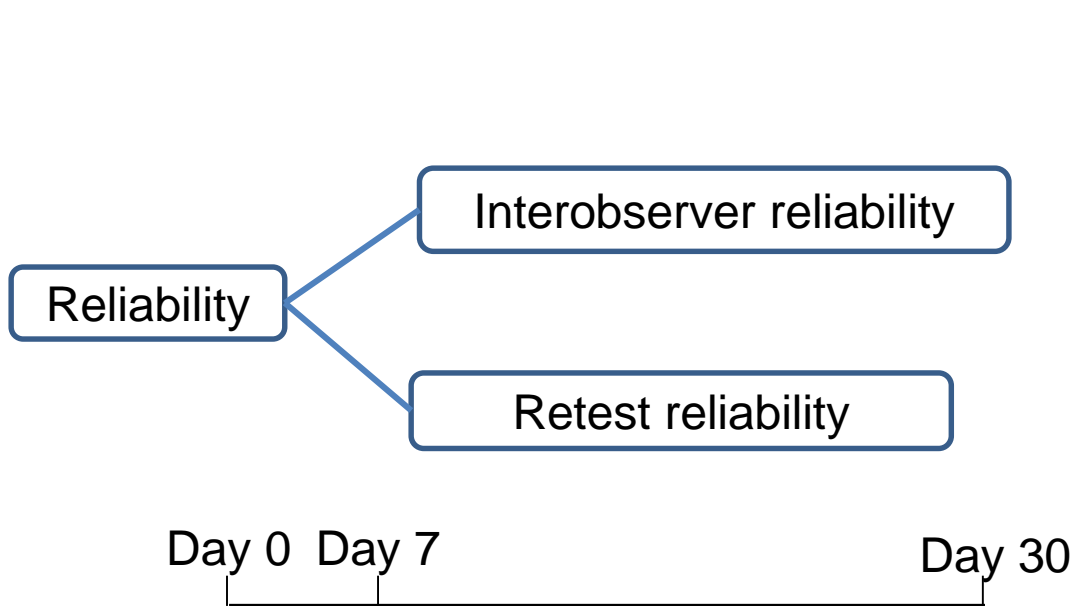
Voluntary Human Approach (VHAT)



Farms and study design

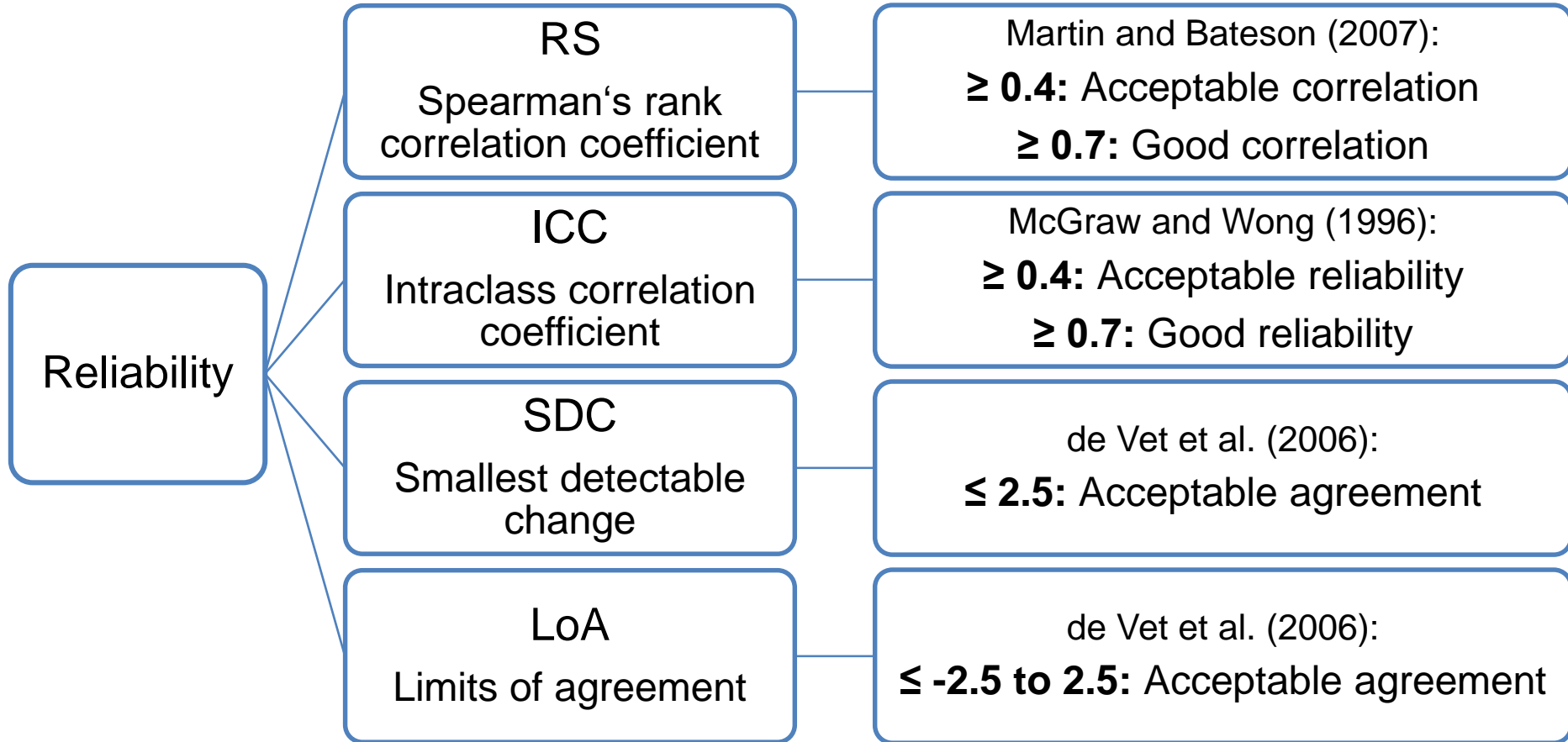


13 growing pig farms, 3 farm visits each, 2 observers





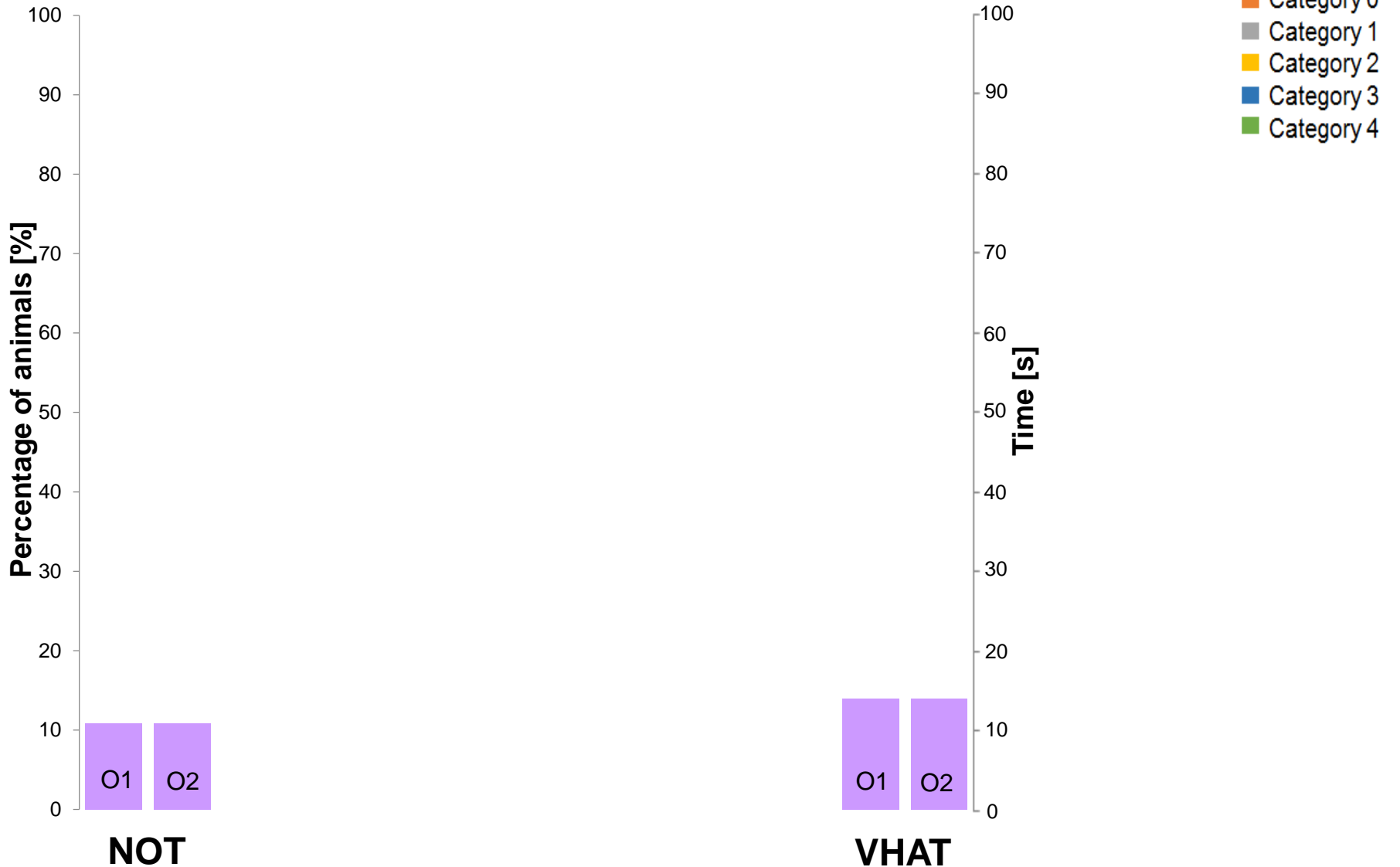
Statistics





Interobserver reliability

Latency times and prevalences of categories of behavioural tests

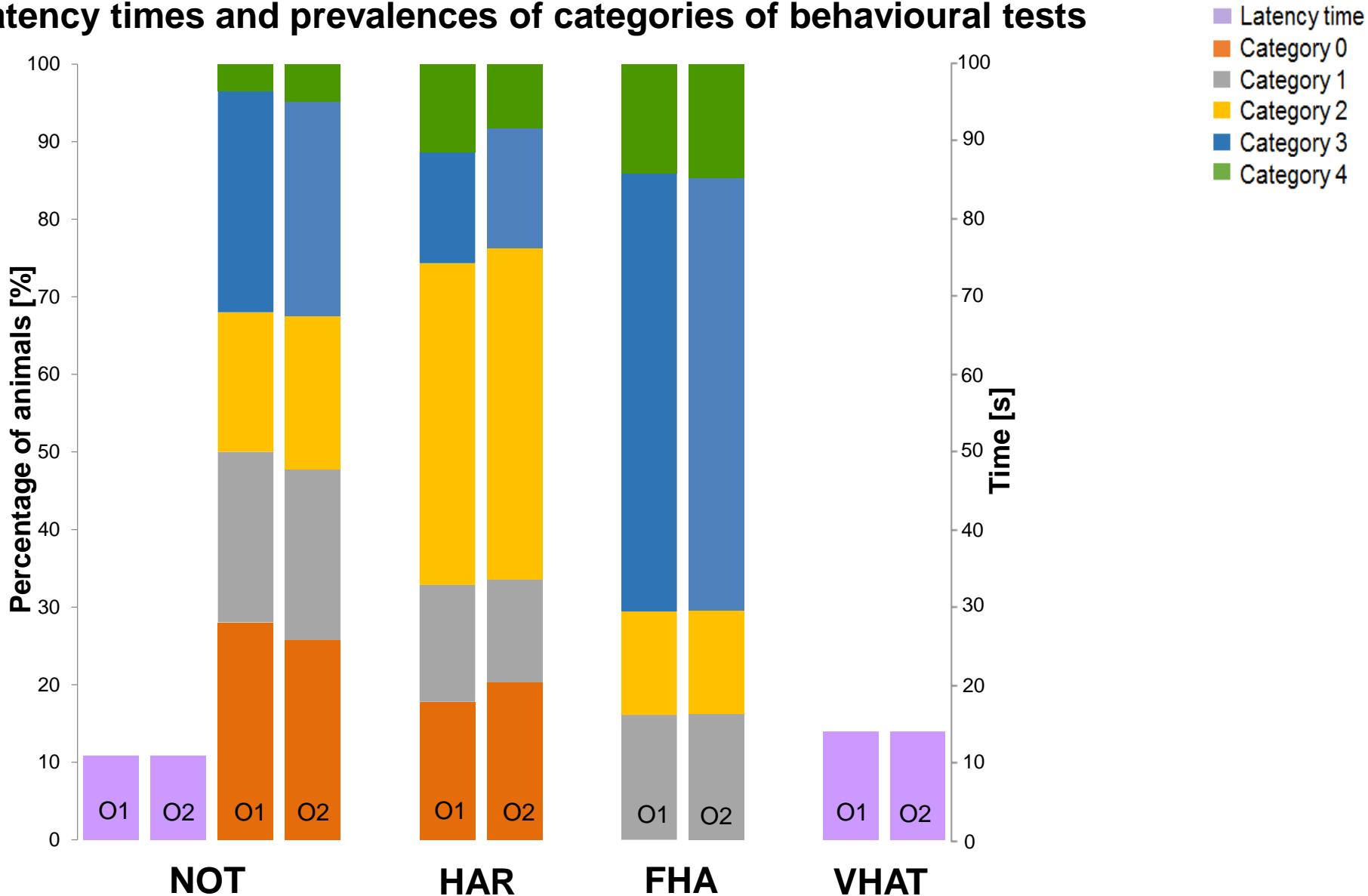








Interobserver reliability

6/13

Latency times and prevalences of categories of behavioural tests



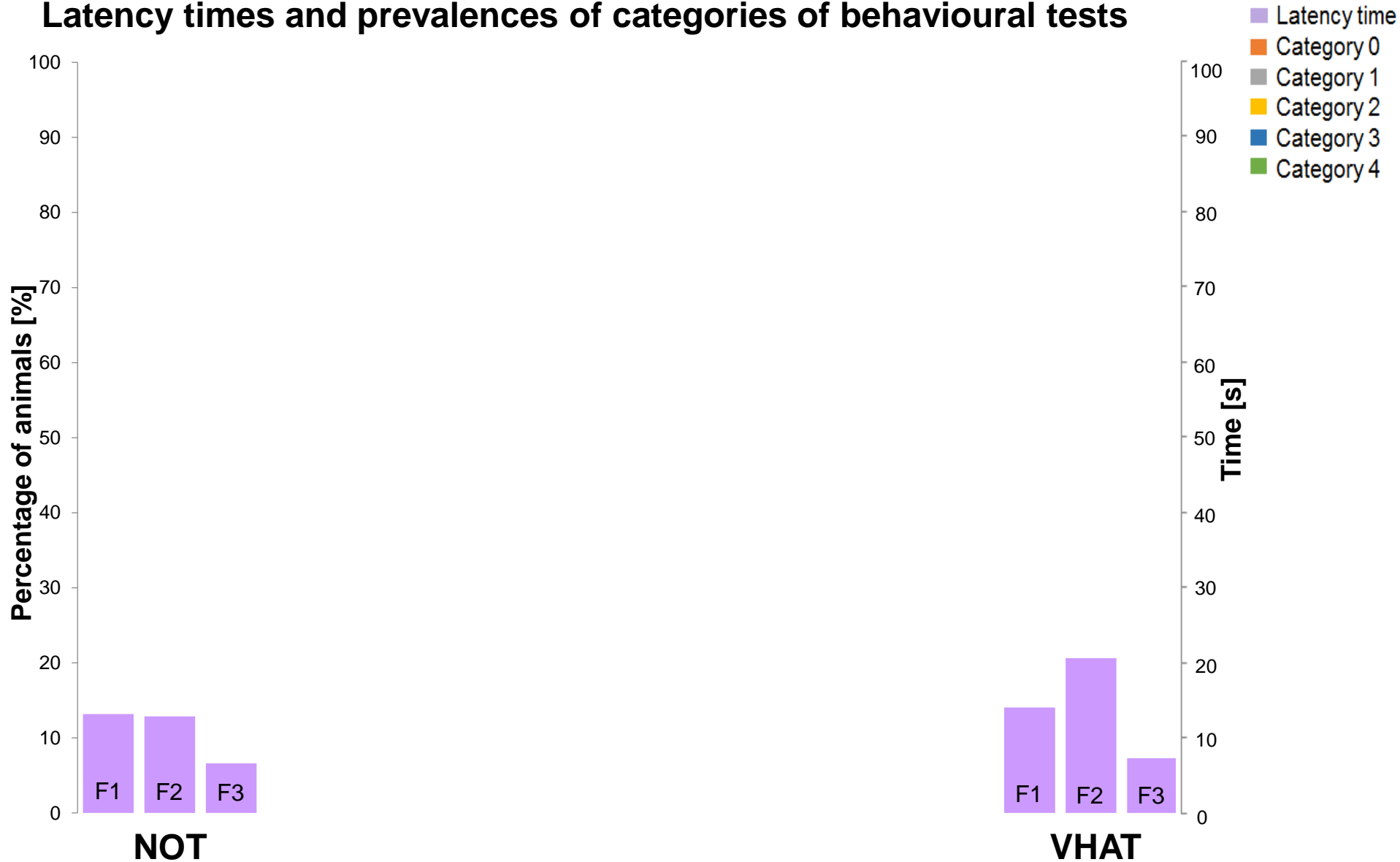
Statistical parameters of the single categories of the behavioural tests

	Cat	RS	ICC	SDC	LoA
 NOT	t	1.00	1.00	0.00	0.00 to 0.00
	0	0.86	0.87	3.47	-3.11 to 3.80
	1	0.69	0.82	4.06	-4.08 to 4.09
	2	0.75	0.74	4.18	-4.44 to 3.92
	3	0.86	0.85	2.24	-2.11 to 2.36
	4	0.5	0.56	2.47	-2.49 to 2.28
 HART	0	0.75	0.79	3.86	-3.49 to 4.23
	1	0.66	0.75	3.1	-3.41 to 2.84
	2	0.94	0.93	3.36	-3.18 to 3.54
	3	0.74	0.87	2.92	-2.76 to 3.08
	4	0.65	0.67	3.37	-3.85 to 2.92
 FHAT	1	1.00	1.00	0.00	0.00 to 0.00
	2	1.00	1.00	0.00	0.00 to 0.00
	3	0.99	0.99	0.23	-0.25 to 0.22
	4	0.98	0.98	0.23	-0.22 to 0.25
 VHAT	t	1.00	1.00	0.00	0.00 to 0.00



Retest reliability

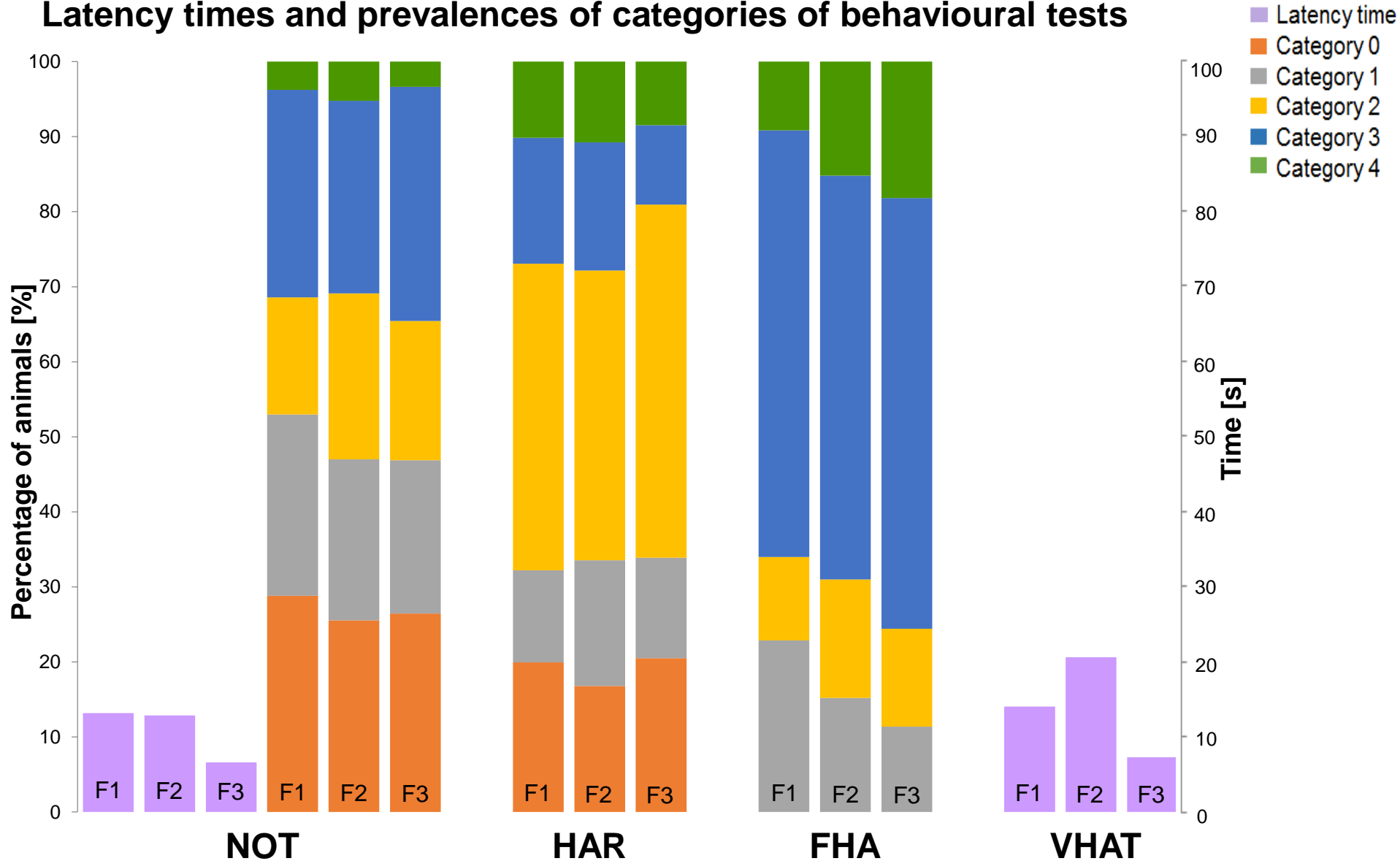
Latency times and prevalences of categories of behavioural tests









Retest reliability





Latency times and prevalences of categories of behavioural tests







Statistical parameters of the single categories of the behavioural tests

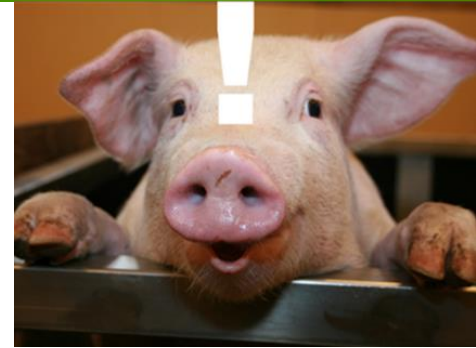
	Cat	RS	ICC	SDC	LoA
 NOT	t	0.53	0.52	23.5	-17.9 to 30.4
	0	0.61	0.73	4.94	-4.84 to 5.05
	1	0.56	0.78	3.87	-3.52 to 4.23
	2	0.60	0.56	4.66	-3.99 to 5.45
	3	0.49	0.50	3.62	-4.21 to 3.06
	4	0.31	0.32	3.08	-2.78 to 3.43
 HART	0	0.58	0.73	4.34	-4.80 to 3.88
	1	0.40	0.64	3.69	-3.14 to 4.24
	2	0.60	0.64	6.96	-8.01 to 5.91
	3	0.19	0.22	6.45	-5.50 to 7.52
	4	0.15	0.07	5.13	-4.89 to 5.64
 FHAT	1	0.51	0.48	1.34	-1.24 to 1.45
	2	0.41	0.60	1.55	-1.47 to 1.63
	3	0.21	0.22	2.43	-2.58 to 2.33
	4	0.38	0.36	1.71	-1.84 to 1.59
 VHAT	t	0.67	0.17	58.3	-56.4 to 83.0

Statistical parameters of the single categories of the behavioural tests

	Cat	RS	ICC	SDC	LoA
 NOT	t	0.03	0.14	38.4	-36.5 to 40.8
	0	0.02	0.36	7.98	-7.76 to 8.24
	1	0.08	0.24	9.19	-7.76 to 8.24
	2	0.08	0.24	6.99	-8.07 to 5.96
	3	-0.04	0.00	6.42	-6.36 to 6.54
	4	0.15	0.30	3.95	-4.25 to 3.68
 HART	0	0.13	0.29	7.18	-6.57 to 7.79
	1	0.05	0.26	5.36	-5.92 to 4.81
	2	-0.05	0.03	12.9	-12.4 to 13.5
	3	0.16	0.21	7.88	-7.72 to 8.05
	4	-0.13	-0.07	7.10	-7.16 to 7.05
 FHAT	1	0.23	0.27	1.95	-1.75 to 2.18
	2	-0.06	0.00	2.31	-2.54 to 2.15
	3	-0.25	0.00	3.78	-3.86 to 3.73
	4	-0.02	0.00	1.67	-1.98 to 1.45
 VHAT	t	0.12	-0.03	70.1	-80.7 to 71.3

Statistical parameters of the single categories of the behavioural tests

	Cat	RS	ICC	SDC	LoA
 NOT	t	0.22	0.19	32.2	-26.5 to 40.0
	0	-0.01	0.37	8.22	-8.64 to 7.86
	1	0.18	0.30	8.42	-9.19 to 8.09
	2	0.07	0.44	5.97	-5.76 to 6.50
	3	0.00	-0.60	6.06	-5.72 to 6.59
	4	0.19	0.22	3.10	-3.16 to 3.05
 HART	0	0.08	0.26	7.46	-7.56 to 7.36
	1	0.23	0.53	4.38	-4.37 to 4.41
	2	-0.04	0.00	12.9	-12.5 to 13.4
	3	0.08	0.15	7.13	-8.36 to 6.14
	4	0.16	0.05	5.46	-6.04 to 5.24
 FHAT	1	0.16	0.16	1.94	-2.30 to 1.65
	2	-0.20	-0.21	2.28	-2.18 to 2.44
	3	0.07	0.07	2.98	-2.87 to 3.22
	4	-0.19	-0.14	1.90	-1.58 to 2.36
 VHAT	t	0.15	0.04	30.2	-24.5 to 38.6



Interobserver reliability

- Good for VHAT and FHAT
- NOT, HART: Questionable with regard to categorisation
→ Fewer categories enhance interobserver reliability
- Overall: Good



Retest reliability

- Reliability better in the reevaluation of the same animals within one week
- Overall: Not acceptable



Different reasons for insufficient retest reliability possible

- Real differences
 - Learning effects, external influences...
- Insufficient validity
 - What do the tests actually measure?

No sufficient reliability of the behavioural tests NOT, VWHAT, FHAT, HART on-farm

→ Use questionable with regard to welfare assessment



Thank you for
your attention