

HOW TO MAKE SURE THAT PLF TRULY IMPROVES ANIMAL WELFARE?

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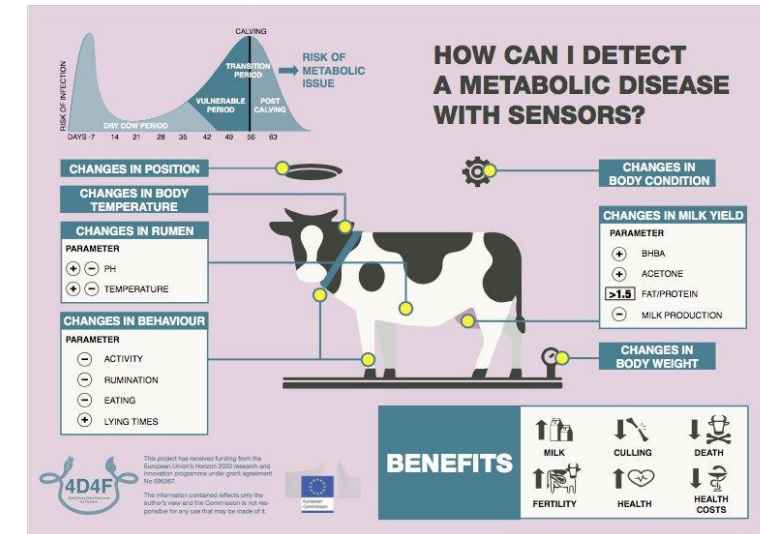
INTRODUCTION

✓ PLF: opportunities to ↗ animal welfare

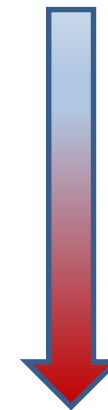
- earlier / better detection
- AW monitoring
- smart adaptations of animal surroundings ~ needs/condition/behaviour

✓ Potential threats of PLF for AW:

- technical failures
- discomfort due to wearing/exposure to sensors
- limited measures of AW
- unordinary AW problems not detected
- ↘ animal contact, concern & care
- ↘ stockman attitude & skills to detect & solve AW problems directly
- ↗ meat consumption → ↗ animal harm



easy to solve



difficult to solve

THREAT 1: TECHNICAL FAILURES

✓ Causes:

- power cuts, PC break downs, signal transmission failures,...

✓ Threat:

- inadequate back-up plans (esp. in highly automated, understaffed, large farms)

✓ Solutions:

- robust technology before commercial introduction
- back-up plans (energy generator, immediate customer support,...)



THREAT 2: DISCOMFORT/LESIONS

✓ Causes:

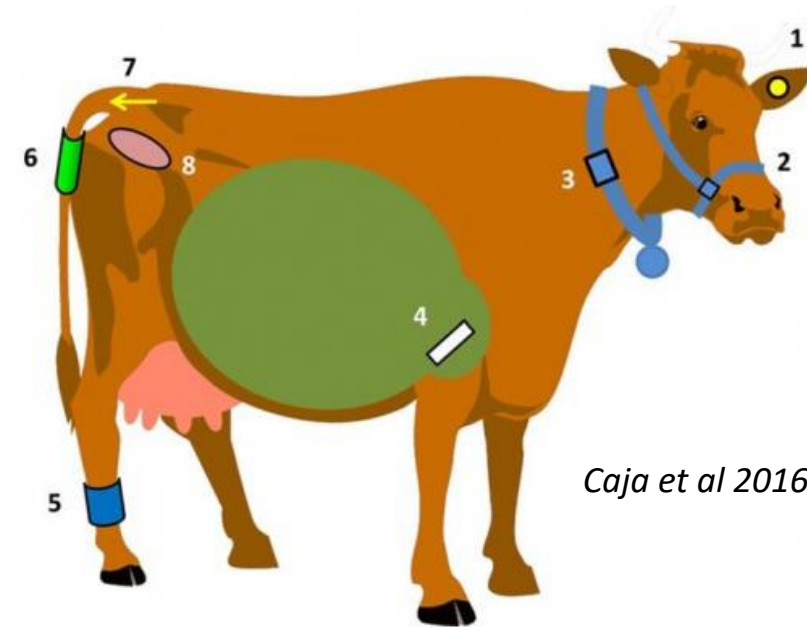
- exposure to noise, radiation,..
- lesions/discomfort due to attaching/implanting sensor to animal

✓ Threats:

- longitudinal, rare and subtle effects poorly tested prior to commercial introduction

✓ Solutions:

- minimize noise, radiation, dimensions & weight,...
- longitudinal tests under variety of circumstances (safety, welfare, behaviour, production,...)



Caja et al 2016



THREAT 2: DISCOMFORT/LESIONS

OLD wearable for UWB-tag (location tracking)



NEW wearable



© Daan Claeys, 2019

Injuries (2wks, Claeys 2019):

82%

Behaviour (wk1, Stadig et al 2018):

↘ walking, ↗ being pecked at

0%

no effects after 10'

THREAT 3: LIMITED AW MEASURES

✓ Causes:

- what CAN be measured ≠ what OUGHT TO be measured
- PLF measures may not be the most important, valid, sensitive, complementary for assessing AW

✓ Threats:

- (wrongly) define AW as what PLF system can measure (some behaviours & physical conditions)

✓ Solutions:

- Validate PLF-data as AW measures
- sensitivity analysis & disclaimer for AW aspects that cannot be documented
- refrain from claiming to assess overall AW
- complementary AW assessments

THREAT 4: UNORDINARY AW PROBLEMS

✓ Causes:

- focus on most common problems & how they're usually expressed
- unusual AW problems / housing systems / situations / individuals ?
- average state may not be optimal for AW

✓ Threats:

- false positives / negatives

✓ Solutions:

- include multiple generic / iceberg AW measures (e.g. within-individual changes in behaviour)
- validation studies (of algorithms) in many different settings & herds



THREAT 5: INTENSIFICATION & AUTOMATION

✓ Causes:

- Automation & intensification: ↗ animals/caretaker & ↘ time interacting with/caring for animals

✓ Threats: animals as “outgroup” less worthy of moral concern, dignity & respect

- ↘ knowledge of individuals & personalities: ↘ anomaly detection, ↗ instrumentalisation
- **Contact Hypothesis** (*Allport 1954*): interacting & caring ≈ concern & +ve attitudes

- Personal interactions with animals provide best opportunity for bonding & empathic response
(*Weatherill 1993, Ascione 1992*)

- People who have not kept any animals report less capacity of animals to experience emotions
(*Morris et al 2012*)

- Children who self-report direct experience with amphibians report less fear & disgust toward them
(*Tomažič 2011*)

- (Respectful) physical contact during school practical reduces disgust & fear of wood louse, snail, mouse in children
(*Randler et al 2012*)

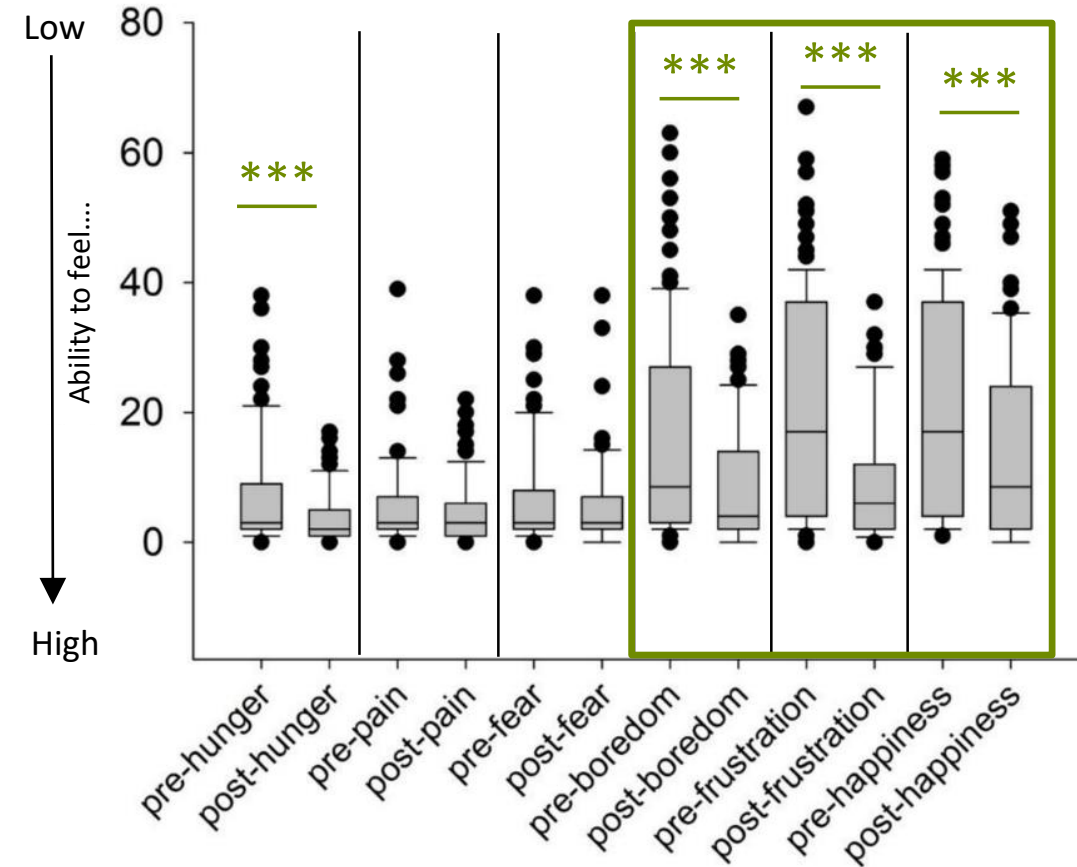
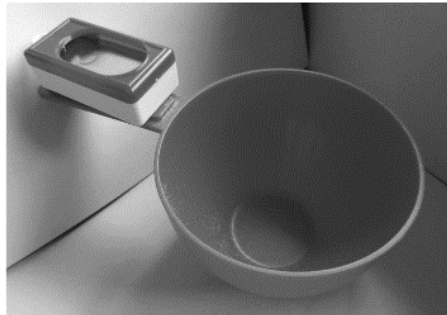


Contact Hypothesis: Evidence?

DIRECT EXPERIENCE

A 2h clicker-training practical (direct contact with individual hens) affected the opinion of animal science / vet students about chickens:

- learning ability
- intelligence
- individual personalities



THREAT 5: INTENSIFICATION & AUTOMATION

✓ Causes:

- automation & intensification: ↗ animals/caretaker & ↘ time interacting with/caring for animals

✓ Threats: animals as “**outgroup**” less worthy of moral concern, dignity & respect

- ↘ knowledge of individuals & personalities: ↘ anomaly detection, ↗ instrumentalisation
- **Contact Hypothesis** (*Allport 1954*): interacting & caring ≈ concern & +ve attitudes

✓ Solutions ?

- ↗ physical contact with individual animals
- high quality contacts (not only –ve or production line interactions)
- study caretaker attitude towards farm animals (influence of PLF/intensification/type of labour)
- responsible keeping & using live animals at school (↔ virtual activities or objects of dissection) ? (↗ sustainability learning: *Wolff et al 2018*)
- create an environment of care, concern & respect of farm animals

THREAT 6: ↘ STOCKMANSHIP SKILLS

✓ Causes:

- reliance on PLF for detecting AW problems may ↘ caretakers' own skills and effort to detect these
- shift in stockperson profile: animal vs technology-centered (stable personality trait: Paul & Serpell 1993, Bjerke et al 2001)

✓ Threats:

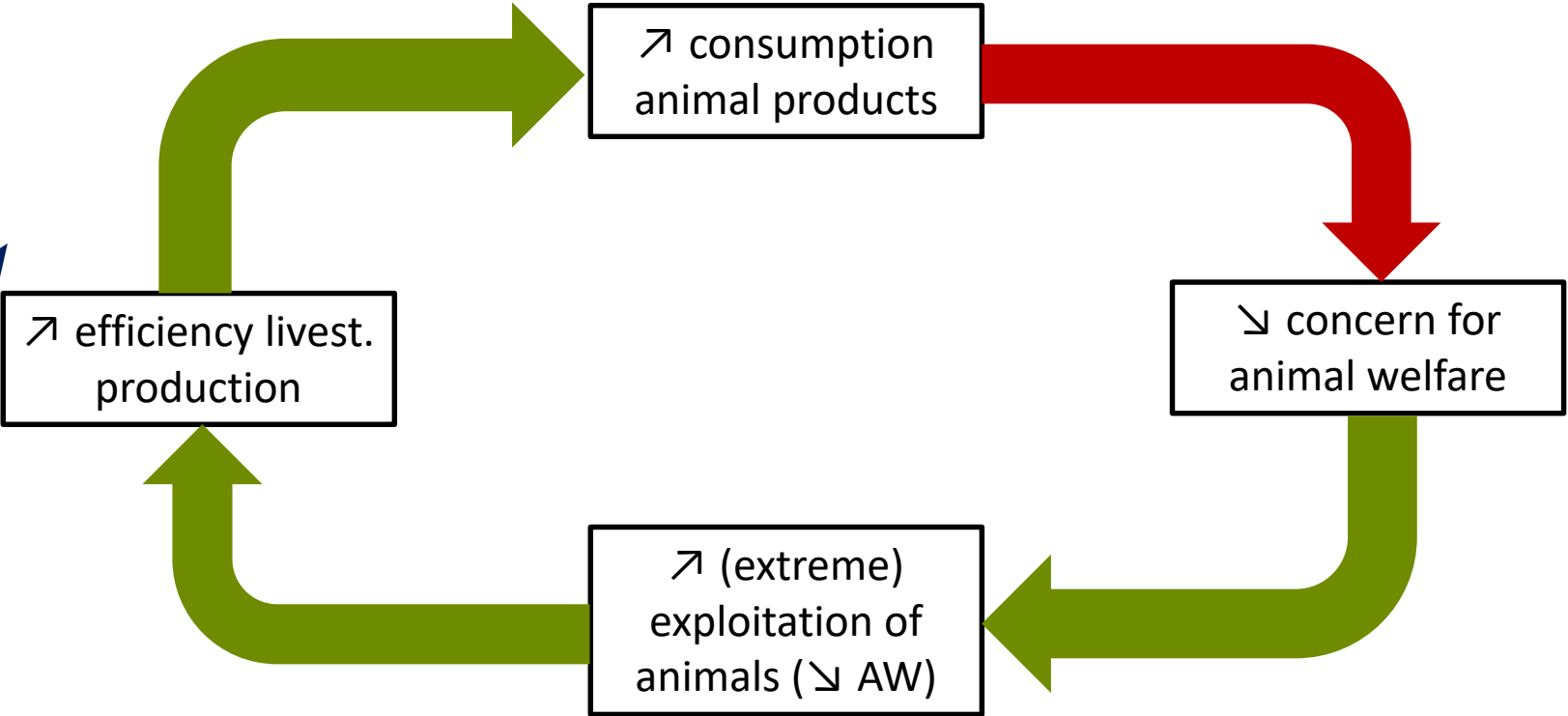
- caretakers being less knowledgeable and oriented towards animals may result in less positive attitudes and AW problems going unnoticed when PLF fails

✓ Solutions:

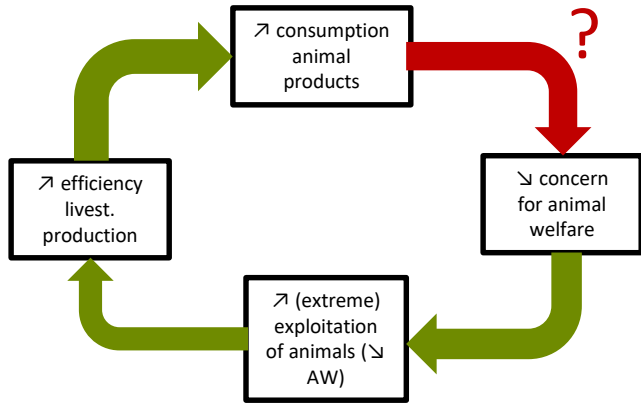
- include animal-orientation as a recruitment criterion & trainings

THREAT 7: ↗ MEAT CONSUMPTION

PLF



THREAT 7: ↗ MEAT CONSUMPTION



Meat consumption ↔ pos. attitudes toward animals (Hagelin et al 2003, Dixon Preylo & Arikawa 2008, Binngießer et al 2015)

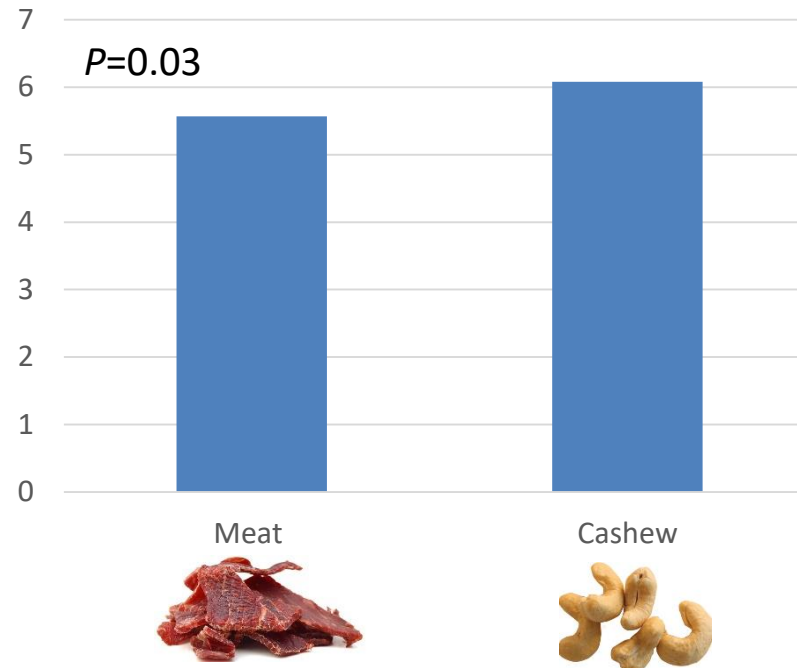
Meat consumption ↔ moral concern for animals (Loughnan et al 2010)

cognitive dissonance
(eating animals ↔ sentience)

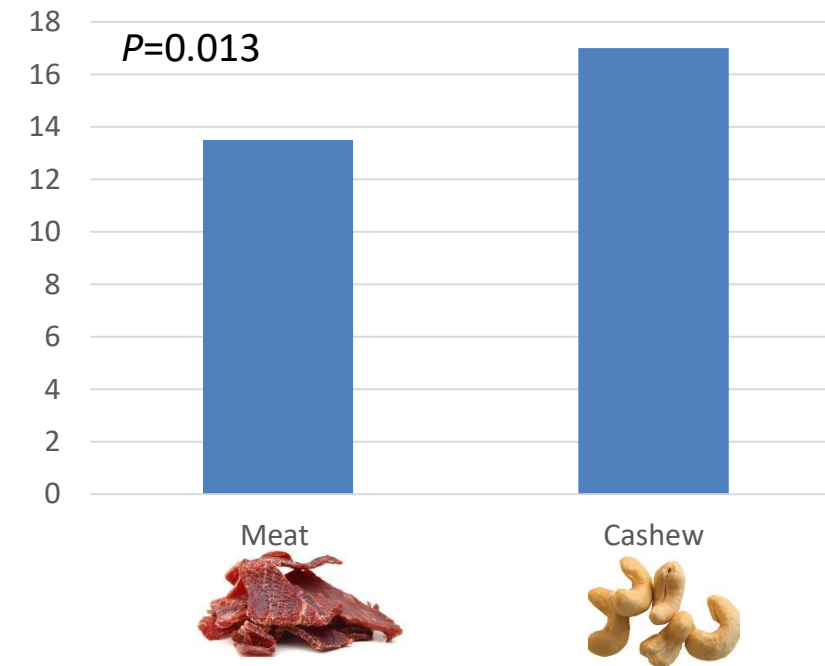
↓

de/infra-humanising animals
(Kasperbauer 2018)

To which extent deserves a cow your moral concern? (n= 188 students)



For how many of these 27 animals do you feel moral concern? (n= 188 students)



CONCLUSION

- ✓ PLF is booming in animal production science and marketing, partly by emphasizing the opportunities for animal welfare.
- ✓ However, the potential threats of PLF for animal welfare and for the social license to produce food from animals need to be acknowledged and addressed as well.

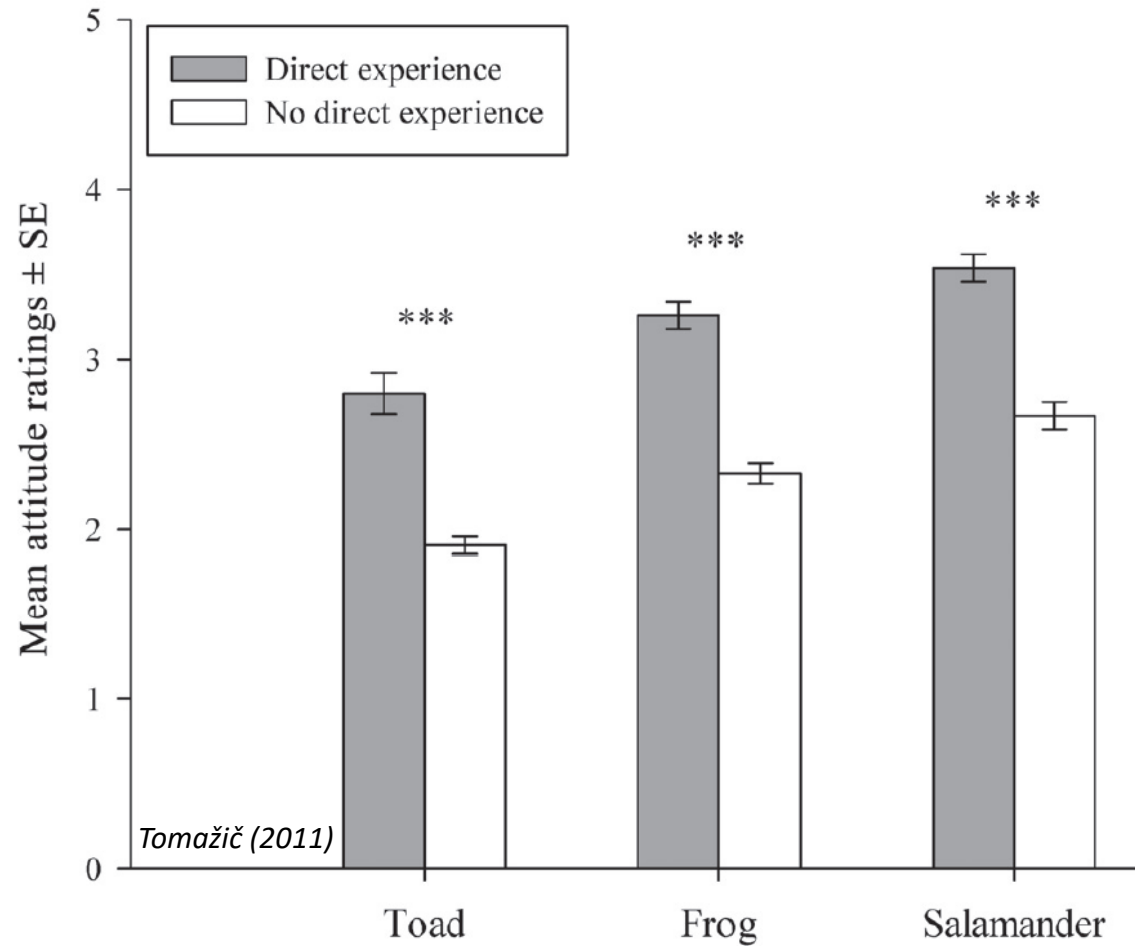
THANK YOU FOR YOUR ATTENTION

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Contact Hypothesis: Evidence?

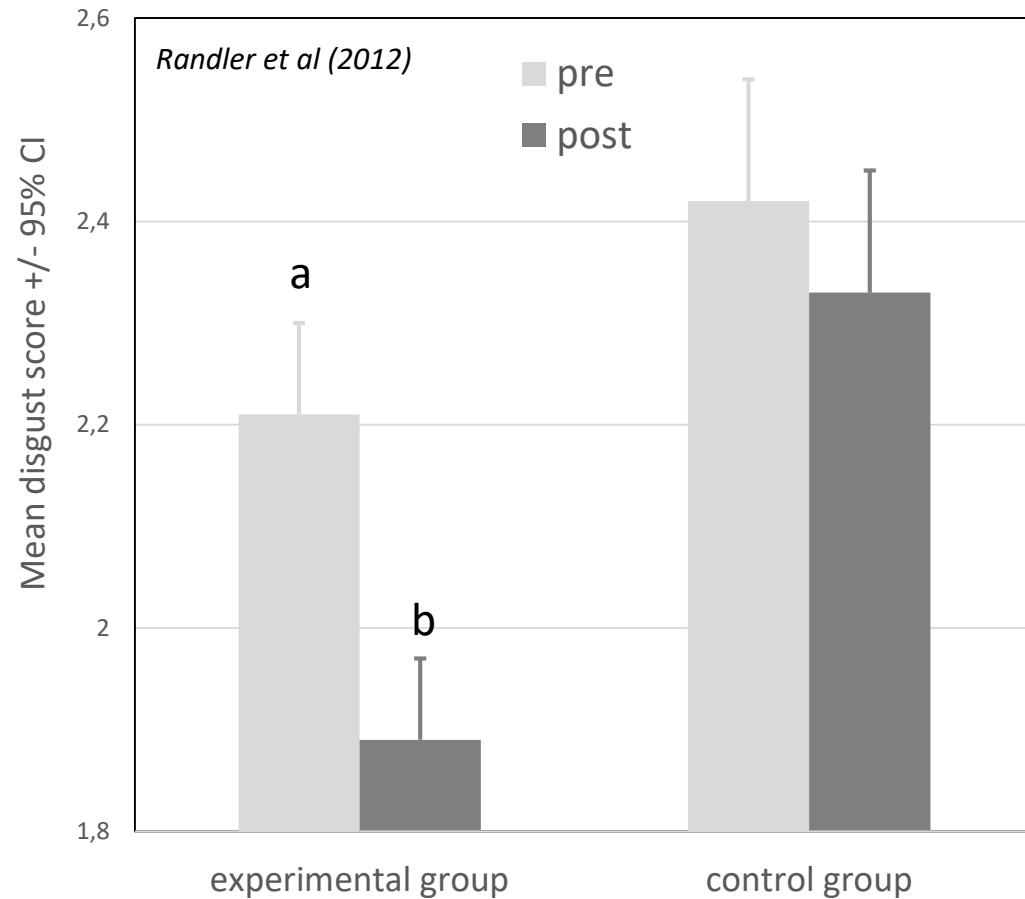


DIRECT EXPERIENCE

- Children who self-report direct experience with amphibians report less fear & disgust toward them

Childrens' attitude towards amphibians according to direct experience (n=487)

Contact Hypothesis: Evidence?

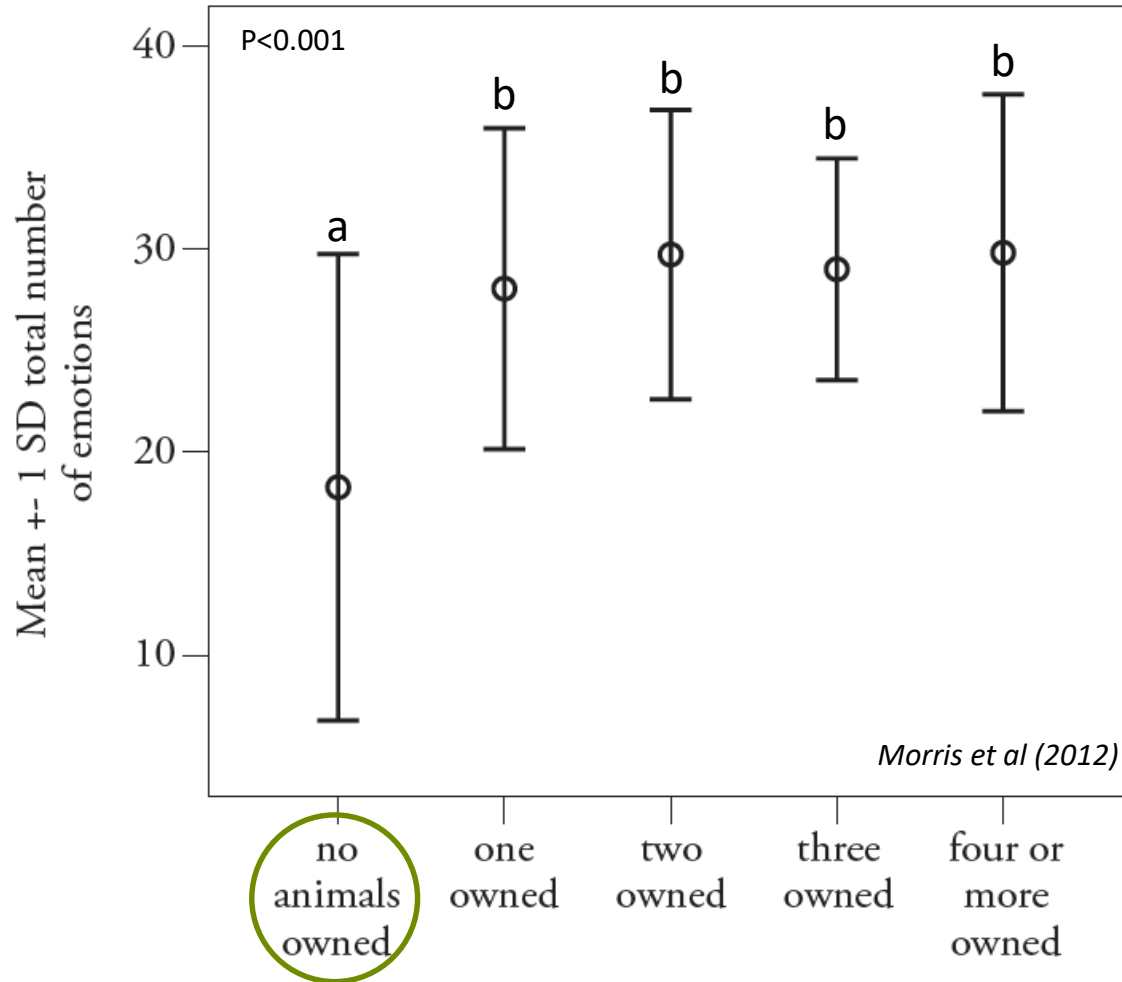


Childrens' reported disgust of unpopular animals before and after direct physical contact

DIRECT EXPERIENCE

- (Respectful) physical contact during school practical reduces disgust & fear of wood louse, snail, mouse in children

Contact Hypothesis: Evidence?

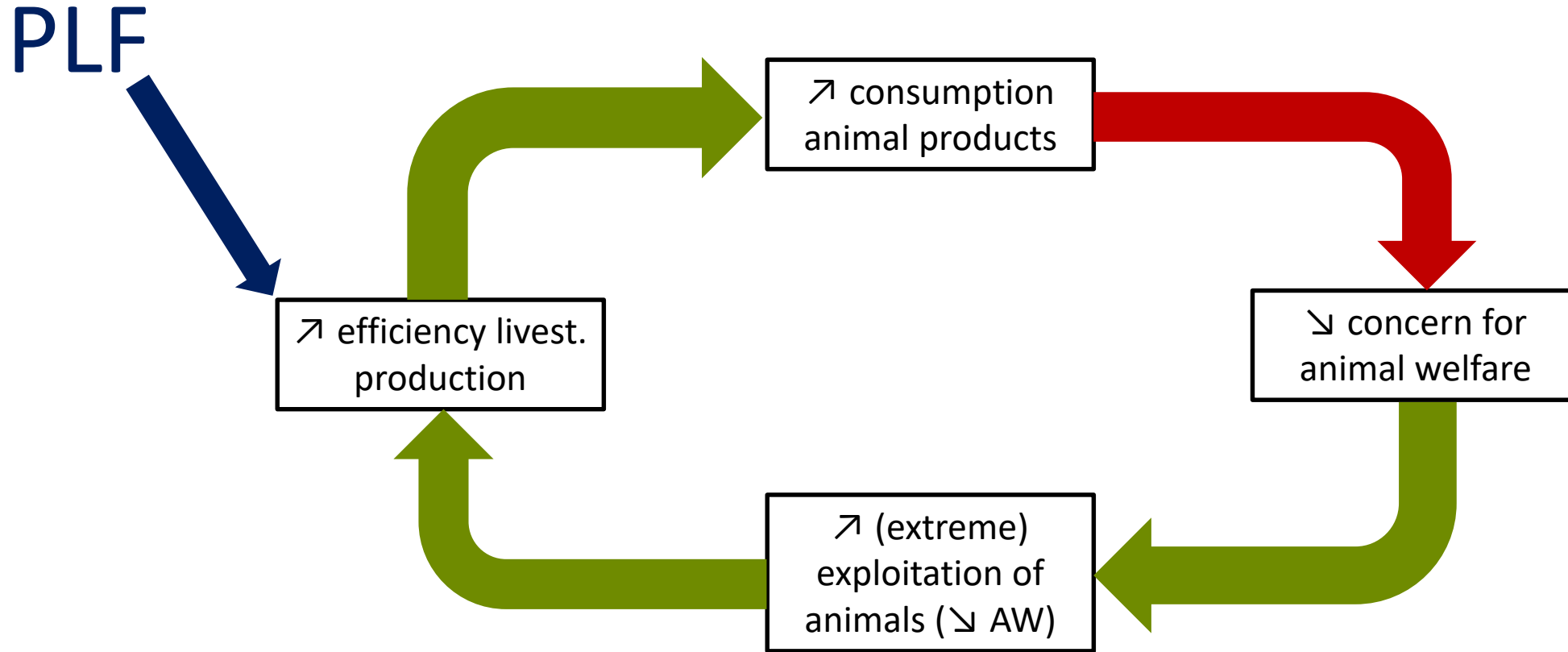


FAMILIARITY

- People who have not kept any animals report less capacity of animals to experience emotions
- Keepers of a particular animal species report more emotions for that species than non-keepers of that species
- Personal interactions with animals provide the best opportunity for bonding & empathic response
(Weatherill 1993, Ascione 1992)

Nr. of emotions (max 16) attributed to dogs, horses, rodents
(n=200 respondents)

THREAT 7: ↗ MEAT CONSUMPTION



✓ Solutions:

- discourage high consumption of animal products (tax,..)
- promote plant-based food