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HUMAN INTERACTION AS ENRICHMENT FOR ZOO-HOUSED ANIMALS: OPPORTUNITY FOR POSITIVE AFFECTIVE EXPERIENCES?

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WELFARE IN ZOOS

- ◆ The subjective, internal experience of the animal (i.e. emotion or affective experience) influences welfare.

- ◆ Concepts that we use:
 - Biological functioning 
 - Affective state 
 - Natural living ... 



POSITIVE AFFECTIVE STATES

- ◆ Positive affective (emotional) states in animals are important for welfare.
 - Quality of Life scale- “a life worth living” or “a good life”. Zoos Victoria Policy update.

- ◆ Some human-animal interactions can lead to positive affective experiences in some animals.
 - What human behaviours, and what animals?

- ◆ How does it increase welfare?
 - Enrichment? Replacement for conspecifics?

- ◆ Cuddle all the animals?
 - Morality and ethics. Science – experiments. Peer-reviewed publications.



POSITIVE AFFECTIVE STATES

- ◆ Opportunities to *thrive*, rather than just survive (Kagan, et al., 2015; Mellor, 2016).
- ◆ Ability to experience positive affect supported by behavioural observations & neuroscience of mammalian (and bird) brains.
 - Reptiles? Amphibians? Fish? Invertebrates?
- ◆ General consensus that many animals experience affective states, have psychological motivation pathways and exhibit goal-directed behaviour (Mellor, 2015).



POSITIVE AFFECTIVE STATES

- ◆ Some important factors for creating these opportunities:
 - variable environments that allow for predictable and unpredictable events (which may contribute to positive experiences of eustress);
 - variability in available resources (food, enrichment) especially with variable complexity of acquisition, allowing animals to perform exploratory and complex, cognitive problem-solving behaviours;
 - provision of opportunities for animals to express choices in their environments, and hence express agency or some perceived control;
 - provision of opportunities that promotes play behaviour;
 - and providing circumstances for animals to engage in bonding and bond affirming activities, and other appropriate affiliative activities with conspecifics or heterospecifics (Mellor, 2016).



HUMAN-ANIMAL INTERACTIONS

Animals' experience:

Negative: (Birke, 2002; Davis, et al., 2005; Hosey, 2000; Mason, 2010; Sherwen, et al., 2015a; 2015c).

Positive: (Bloomfield, 2015; Claxton, 2011; Hosey, 2013; Jones, et al., 2016; Manna, et al., 2007).

Innocuous: (Choo, et al., 2011; Hosey & Melfi, 2015; Sherwen, et al., 2015a; 2015b).

- ◆ Many responses have been found to be mixed, depending on species and/or individuals (Collins & Marples, 2015).



HUMAN-ANIMAL INTERACTIONS

- ◆ Responses to visitors may be specific to individuals:
 - animal genetics
 - experiential conditions (subjective experiences)
 - social learning and facilitation
 - enclosure design
 - behaviour of visitors

- ◆ This may vary greatly within a species or any one group/population.

- ◆ Relationship is bi-directional (Margulis, *et al.*, 2003)
 - can lead to self-reinforcing feedback loops.



HUMAN-ANIMAL INTERACTIONS

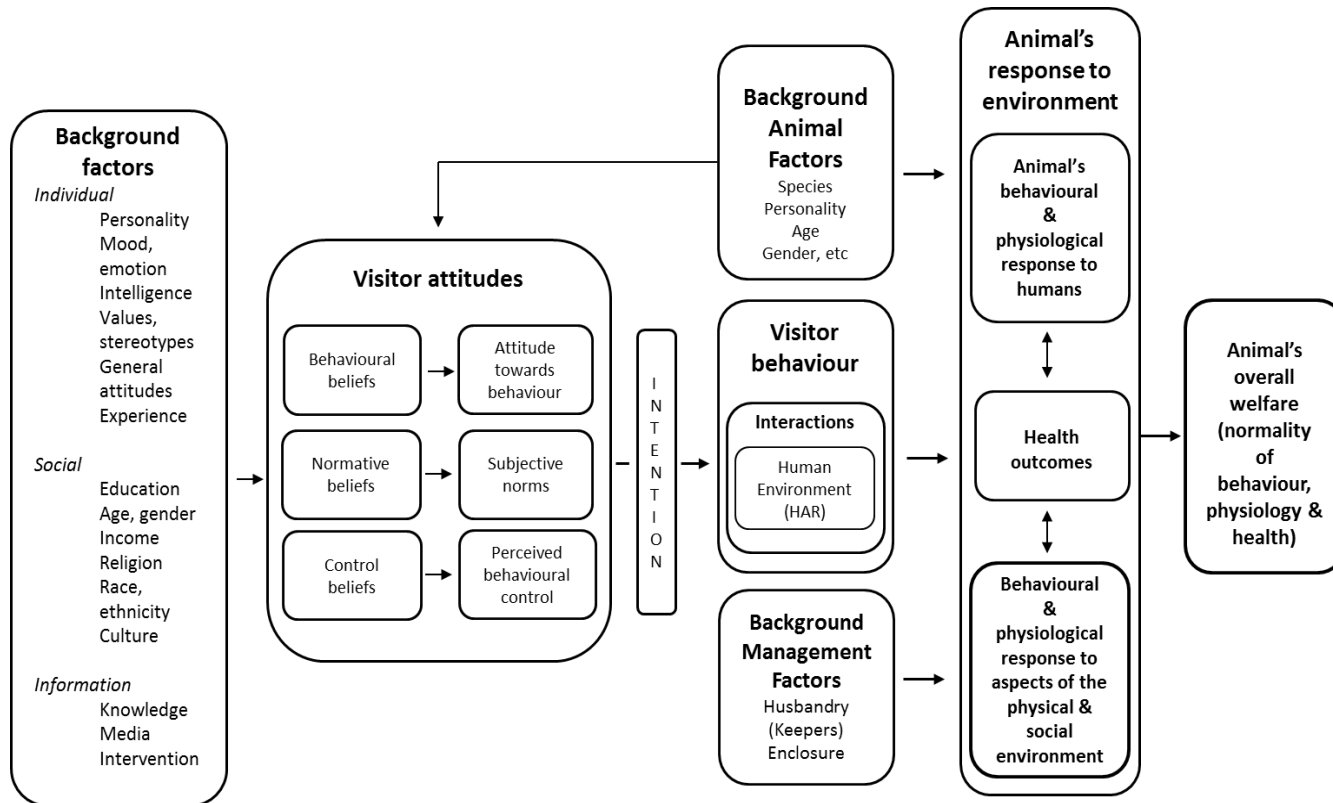


Figure 1: Visitor-animal interaction model (adapted by S. Chiew, personal communication).



HUMAN-ANIMAL INTERACTIONS

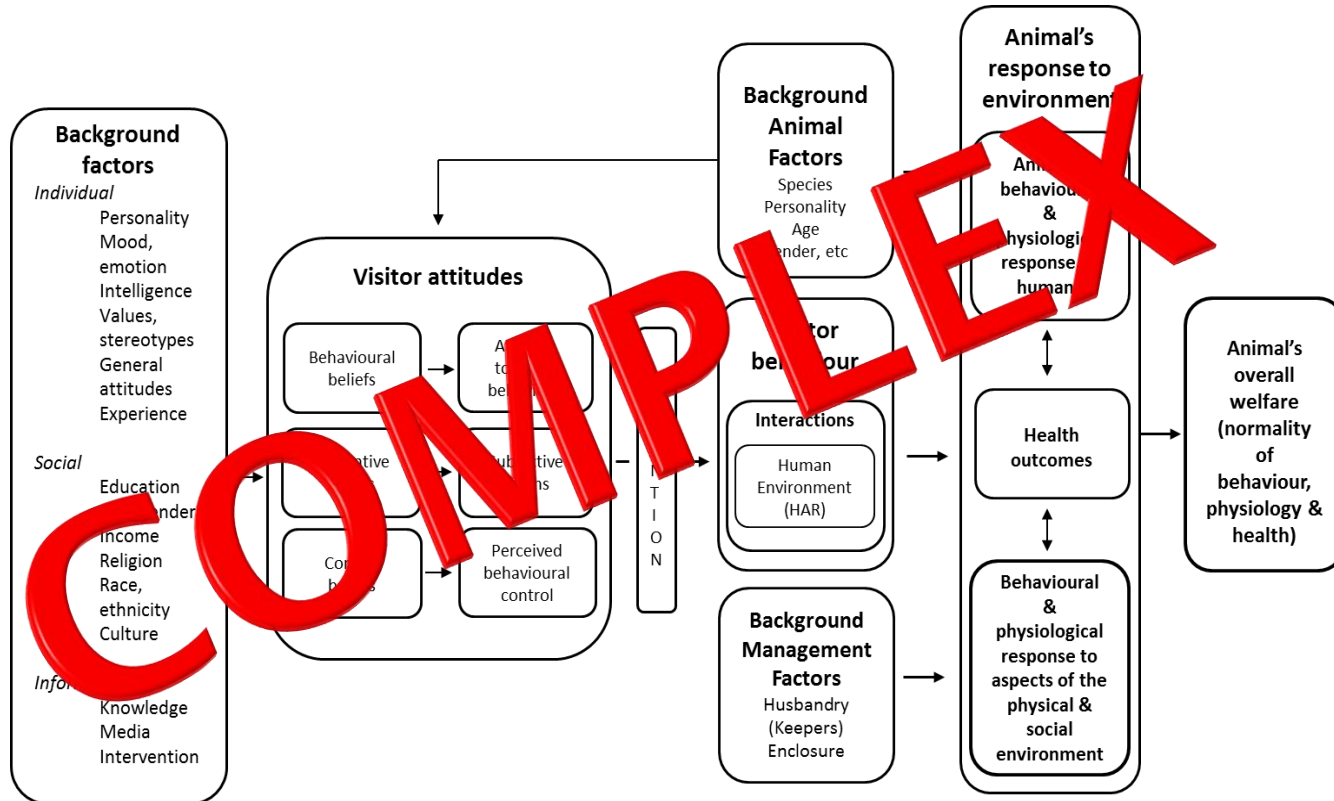


Figure 1: Visitor-animal interaction model (adapted by S. Chiew, personal communication).



HUMAN-ANIMAL INTERACTIONS

- ◆ How do we ensure zoo-housed animals have opportunities to experience positives?
 - ETHICS: why bother?

- ◆ Firstly, we must establish ability of animal to choose rewarding circumstances
 - Preference tests



ETHICS AND PHILOSOPHY

- ◆ Why bother with positives, not just removing negatives?
 - Thrive rather than survive.
 - Do we have a moral obligation?

- ◆ Should zoos provide a more natural environment for zoo animals including minimisation of human contact, or provide MORE human interaction if it benefits positive experiences for the animal?
 - Natural living and the mistake of “wilding”.



ETHICS AND PHILOSOPHY

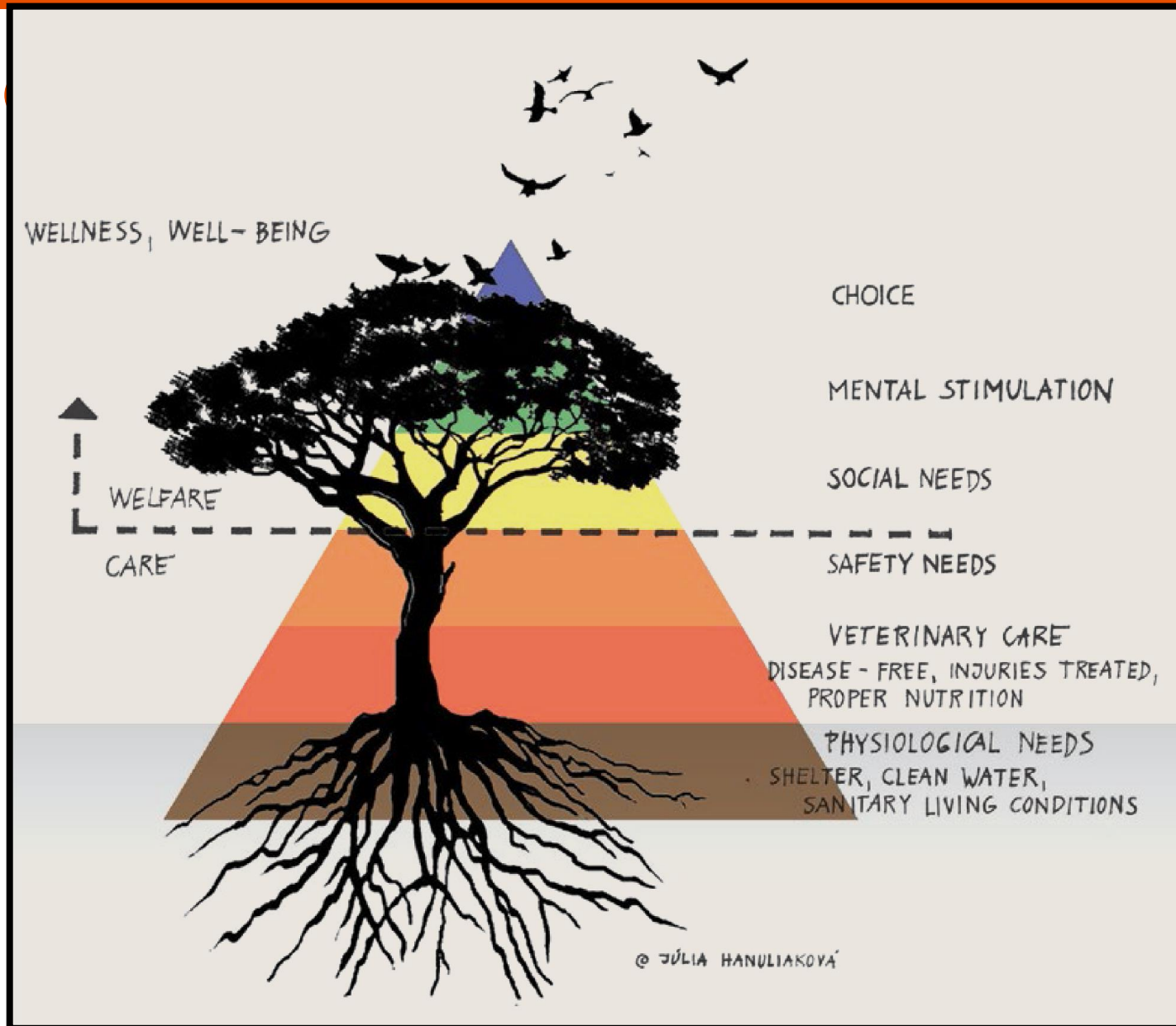
- ◆ Animal Machines and farm animal treatment.
 - FAWC: Five Freedoms.
 - Brambell report (1965).
 - Enriched cages, free-range.

- ◆ What about pets? Recreation animals? Lab animals?
 - Mellor: Five Domains.

- ◆ What about zoos?
 - WAZA: core *purpose* is conservation; core *activity* is animal welfare.
 - Positive animal welfare!



ETHICS





NATURAL LIVING

- ◆ Natural living is one of the three key concepts of animal welfare.
 - Ability to express natural behaviours.
 - Naturalistic environments.

- ◆ Promoting natural behaviours \neq Treating as a wild animal (“wilding”)



NATURAL LIVING

- ◆ “Wilding” has logical pitfalls.
 - Captivity, by definition, is not wild.
 - Natural environment also must be practical for circumstance.
 - ZERO human contact is not feasible in captivity (Animal husbandry/management?)
 - Captivity is leading down the path to domestication.

- ◆ Breed and cull: Natural behaviour for breeders, but welfare/ethical concerns for offspring (and parents)!
 - Little to no evidence of compromised welfare for animals on contraception.



ETHICS AND PHILOSOPHY

- ◆ Are some animals given more attention because we know better about their cognitive capacity and needs?
 - Is there evidence that mammals (especially primates) receive more attention than birds or reptiles? What about invertebrates?

- ◆ Does positive, diverse and/or intermittent human contact equal enrichment?
 - Scientific inquiry will answer this, but also needs consideration ethically.



HYPOTHESIS

Dependent upon the life history of the species, environment (enclosure design, retreat areas, and accessibility of resources) and individual experiential effects (including their individual history of keeper and visitor interactions, and social learning), some zoo-housed animals find some visitor behaviours rewarding, and therefore are highly motivated to actively interact with visitors.



STUDY ANIMALS

- ◆ Meerkats (WORZ)



- ◆ Giant Tortoises





RESEARCH APPROACH

The experimental research will have three logical, sequential components:

- Study 1:** Determine the relationships between specific visitor behaviour patterns and specific zoo animal behaviour patterns (visitor-animal interactions).

- Study 2:** Determine the preferences of zoo animals to actively interact with different stimuli (including specific human contact).

- Study 3:** Determine the effects of human behaviour patterns preferred by zoo animals on the behaviour and neurophysiology of zoo animals.



STUDY 1: GTs AND MEERKATS

Visitor-animal interaction observations

- ◆ Cameras to record interactions between animals and visitors
 - Frequency of visitor and animal behaviours during visitor-animal interactions measured

- ◆ Principal Component Analyses will be conducted on these data
 - Extracting important components of behaviour or behavioural patterns from a much larger set of variables
 - Identify visitor behavioural patterns that are predictive of specific animal behaviours or behavioural patterns
 - PCA technique has been used to study interactions between visitors and seals previously (J. Taylor, honours project 2016)



STUDY 2: GTs

Virtual preference test

- ◆ The three proposed stimuli to be used for the trials are:
 - 1. Food (carrot pieces- a high value reward).
 - 2. Human interaction (shell and neck rubs using hands).
 - 3. A novel, neutral object (a red enrichment ball).
- ◆ Determine motivation to actively interact with different stimuli.
 - The human behavioural patterns will be informed by results of Study 1. A proposed protocol has been developed in anticipation of this.
- ◆ 'Virtual': no fixed, built structures in enclosure. (i.e. no choice maze).
 - One stimuli per trial, not two (this is not a typical choice trial setup).
 - To determine the motivation to divert off an intended route.



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