

Variations in predictability have been shown to play an important role on the behavioural and physiological effects of stress in rats and other animals. These effects may also be present in captive animals, during for example, unpredictable husbandry routines.

This review examines the effects of predictability of aversive and appetitive stimuli on the behaviour and

SUMMARY

physiology of animals and how this knowledge can be used to increase welfare in animal husbandry. It also examines the effects of “temporal” predictability, when an event occurs at fixed or variable time intervals; and “signalled” predictability, that relates the reliability of a signal preceding an event; in relation to the positive and negative perception of the animal, linking it to control.

Paper Highlights:



Reduced environmental complexity is associated with an increase in predictability.



Training animals through positive reinforcement may help to increase the perception of control by the animals and decrease stress associated with unpredictable events.



Studies showed that predictable negative events are less behaviourally disruptive than predictable events in the short-term, however can cause exhaustion in long-term when animals cannot adapt to the event.



Signalled predictability in both positive and negative events seems to be more important than temporal predictability, since animals will react only when the signal is present and not in its absence.



Studies suggest that in a highly predictable environment, animals may become locked in cycles of anticipatory behaviour by the recurring events.



It has been suggested that for optimal welfare, a balance between predictable and unpredictable events should be pursued and the animals' perception of, and response to, events should be monitored

Welfare Efforts



1. Animals should have an absence of prolonged hunger, and remain in a healthy weight range.

Ad libitum food delivery may have negative impacts on animals; however, scheduled food delivery may increase anticipatory behaviours which may be signs of compromised welfare. Knowing your species may help you decide for a lower calorie diet for ad libitum food delivery or other solutions for scheduled food delivery that may prevent anticipatory behaviours.



2. Animals should have access to appropriate food and species-typical foraging opportunities (i.e. they should have nutritionally suitable and appropriate diet and delivery).

Predictability in food delivery may depend on the species. Some species will prefer specific schedule for meals and others will prefer more an unpredictable feeding and place schedule so they may increase exploration behaviours. Knowledge of the species and natural behaviours is crucial to adjust the best strategy.

Why is this relevant to animal welfare?

The notion of positive/negative and predictable/unpredictable events in terms of animal welfare is extremely important and knowing how to use this information for the different species is vital. Scheduling negative events on a reliably predictable schedule will minimise the negative impacts associated with the event.

Why is this relevant to the practical care for animals?

These concepts are important to reduce stress in activities that trainers/caretakers perceive from the beginning that may be stressful for some individuals. Using a combination of positive reinforcement training and a signal for negative events may help to decrease animal stress regarding to those unpredictable activities. Occasional unpredictable positive events is likely to improve wellbeing.

Links to some practical examples:



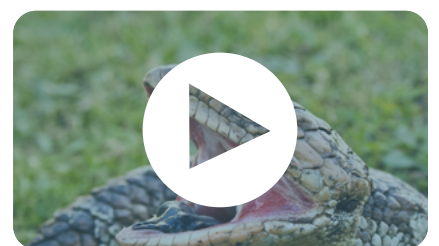
[Is it all about control?](#)



[Elephants at the Oregon Zoo](#)



[Providing control to reduce stress](#)



[Enclosure Design Tool](#)



[Challenges in Environmental Enrichment](#)



[Smart feeders for Lemurs](#)



[The Importance of Choice in Animal Training](#)



[Predictable Feeding in Zoos](#)

ORIGINAL SOURCE

Lois Bassett, Hannah M. Buchanan-Smith Effects of predictability on the welfare of captive animals, *Applied Animal Behaviour Science*. <https://www.sciencedirect.com/science/article/abs/pii/S0168159106001973>