



Environmental Stressors

Stress as a behavioural experience

Stress is a physiological reaction by the body to challenges posed by the animal's external environment as well as changes in the internal environment caused by diseases, trauma or any other condition that affects the normal bodily functions detrimentally. The body attempts to find equilibrium/balance (homeostasis) by continuously keeping the stressors under control by physiological and emotional coping mechanisms. If the body fails to cope effectively, positive stress becomes negative stress.

The body has external and internal senses that perceive their life-world and those stimuli are interpreted in the brain as dangerous, harmful, threatening, of no importance, friendly or any other emotion. Based on the specific interpretation in the brain the body will react to deal with the information sent by the environment. In short, animals are not non-sentient 'things' with a lack of sensing, interpreting and reacting to their environments. The problem arises when humans do not consider these facts and think that if I as a human, do not experience an environment for example non-threatening, the animals in the human-provided environment should also experience the environment non-threatening.

The next question is: How do I, as a human, know what is an animal experiencing in a human environment? The answer lies in knowledge regarding the specific species' needs (ethogram). That is the closest we can get in understanding what environmental influences on a specific animal could have.

Before discussing possible environmental stimuli on animals, it is of importance to understand that reaction by the body to such stimuli is also not a mechanical 'black or white' reaction. The popular reference to a so-called fight-or-flight-reaction as if the animal has no other coping mechanisms, contributed to the idea that animals react machine-like. Apart from a variety of emotional responses to environmental stimuli, an animal could also adapt to an environment that was previously or initially experienced as stressful. Someone, who is conversant with the particular species' needs and signs of stress, should thus evaluate every animal for stress reactions on an individual basis and in context of a specific environment.

ANIMAL SENSES

Senses that could receive stimuli, which may cause negative stress (cannot cope with it) in animals:

- Ø Sight: To humans this may be the most important, but animals are usually only alerted by bright and flickering lights such as fluorescent lights. They are also more

alerted by bright colours and any quick movements in the environment, but less by detail of objects. An acceptable environment would thus be pastel, natural colours such as blue (sky, water), green (plants), brown (soil); a steady, less than bright light source; and slow or stationary objects.

- Ø Sound: Many animals are alerted by high frequency sounds (measured in Kilohertz) that are inaudible for humans, and by sharp harsh sound (measured in decibel). Unexpected variation between both types of sounds that alert could be stressful. Sounds should thus be of such a nature that the animal can interpret them as harmless and adaptation to a sound or sounds should be limited to low frequency softer sounds.
- Ø Odours: Many animals have a far superior smelling ability than humans. Animals are not only able to sense small fractions of smells, but can also discriminate between those fraction and dilutions. Due to this fact humans rarely think about smell as an environmental stressor. The best smells from the environment could be the smell of conspecifics (from the same species) or known other species such as humans; natural food; acceptable comfort area; and in general - fresh air.
- Ø Taste: Animals could have taste preferences and palatability of food for a specific species is critical in feeding animals. Aversion to food is a protection against poisons, but on a continuous basis such aversion is also a stressor. Food should thus not only nutritious to prevent internal stressors due to imbalances, but it should be acceptable to the animal eating the food.
- Ø Feeling: Although the experience of pain is often part of a debate among physicians and physiologist in the human and animal fields, there should be no doubt that animal have basically the same nervous system mechanism regarding the interpretation of pain. This is known because reaction signs by animals to pain are very similar to that of humans. On the other hand, friendly social touches may have the same positive interpretation in both humans and animals. However, two aspects should be considered. Touch may be need different intensities to be effective in different animals; and there is a physiological threshold regarding the time and intensity of touching or stroking. Lastly, animal should also be protected against the elements such as rain, hail, snow, strong wind, which in normal behaviour make the animal seek for shelter.
- Ø Cognitive map: Animals have a sense of space, time and direction. Therefore, any new or artificial environment could cause stress, for at least the time it takes to adapt to such an environment. If environments change often it could cause severe stress on an animal that is not able to adapt fast. The ability to adapt to new environment is determined on an individual basis by the animal's genetic make-up.
- Ø Temperature: the normal body temperatures of animals differ and they also differ from the human's body temperature. Many humans only think of their own comfortable temperature zone without considering a particular animal's comfort zone. Too low or too high as well as fluctuating temperatures are able to cause stress.
- Ø Ventilation: Any housing facility that keeps animals should cater foe appropriate ventilation. A sense of lack of oxygen will have an effect on the respiratory as well as circulatory system. The reaction could vary to hyperventilation to panic with associated increase in pulse rate. Ventilation should be effective both during the day and at night.
- Ø Motion: If animals are transported they are exposed to the sense of motion. This could lead to motion sickness. Although some animals are able to adapt to

travelling, some are not (this variation on an individual basis is also present among humans). Motion sickness or panic attacks are the two main reasons why animals often need medication to make trip more successful. Animal travels should always be considered as potential stressful, because many animal suffering and deaths are caused by motion stress.

- Ø Balance: Animals can sense where is 'This side up' and they will attempt to correct their body posture if the body is not in a self-acceptable position. This sense also comes into play when an animal is falling. Animals should be able to keep their bodies in positions that they decide upon without force.
- Ø Hygiene: Although some people may think that animals have no sense of hygiene in their environment this is not true. This sense may vary between animals and it may be not the same as for humans, but some animal could become stressed by an unhygienic environment. As a rule, provision should be made to remove effectively (without stressing the animal further) excretions and food leftovers on a regular basis.
- Ø Safety: Animals have strong sense for a feeling of safety. If humans feel safe in a particular environment, it is no guarantee that animals will the same in the same environment. Reactions of animals that are not feeling safe will include stress symptoms. If animals need medication to counter such signs, the environment should be changed to ensure a sense of safety for the animal.
- Ø Belonging: Especially animals with a well-developed social system will get stressed if their sense for belonging is not met. This social need could be fulfilled within the same species, same gender, and same age or between different species, gender and age. The precondition is that the animals should be compatible and relieving the sense of belonging and not increasing social stress.

SIGNS OF STRESS

Stress reactions could be described in behavioural as physiological terms, but these reactions are not really separate entities.

- Ø Physiology: Physiological changes during the experiences of immediate stressors are well defined. It includes increases in pulse, blood pressure, respirations (panting), pupils dilate, more blood flows to the muscles, spleen enlarges, blood clotting improves and body reserves are broken down. The body prepares for emergency actions.
- Ø Behaviour: Panic, destructive behaviour, vocalisation, capitulation or freezing, over-aggression, attention-seeking behaviour, compulsive behaviours (stereotypies), displaced behaviour, displacement of behaviour, scanning the environment continuously, psychosomatic behaviour, depression or withdrawal, digestive disturbances and lack of libido.

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