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General Patterns of Animal Behaviors

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- Each species of animal has a characteristic way of performing certain functions and rarely depart from them.
- The nature of behavior pattern is determined by heredity, but can also be modified by trials and error learning.

Patterns of behavior has general functions described as follow:

1. Ingestive behavior.
2. Eliminative behavior.
3. Sexual behavior.
4. Care giving behavior.
5. Care soliciting behavior.
6. Agonistic behavior.
7. Allelomimitic behavior.
8. Shelter seeking behavior.
9. Investigatory behavior.
10. Body care Behavior
11. Thermoregulatory Behavior
12. Motivational Behaviors.

1- Ingestive (Nutritional) behaviour:

- **The pattern of ingestive behavior is related to anatomy, physiology and psychology of animal species, nature of its food.**
- **Ingestive behavior includes**
- **both solids (feeding) and liquids (drinkng)**

Special and Species Features of Feeding Behaviour

Feeding by Cattle

- rely on the high mobility of the tongue,
- use tongue to encircle a patch of grass and then to draw it into the mouth, where the lower teeth and tongue used to hold the grass while it is broken by the head movement.
- After taking a several bites, the cow manipulates the plant materials as follow:

Special and Species Features of Feeding Behaviour

- **Feeding by Cattle**
  - **Chewing only 2 or 3 times before swallowing. Following ingestion**
  - **comes rumination;**

In rumination, the cattle

1. **regurgitate,**
2. **remasticate,**
3. **reinsalivate and**
4. **Re-swallowing (then swallow food previously ingested into the rumen).**

Special and Species Features of Feeding Behaviour

- Grazing pattern in cattle, sheep, and goat, is correlated to the lack of upper incisors;
  - They warp a mouthful of grass with their mouth and move their head forward so that the grass is cut by lower incisors.
- Ruminants spend large amount of the day eating, that different from the food habits of domestic carnivores.
  - e.g. Dogs and cat eat one time per day, spending very little time eating, dogs are especially rapid eaters gulping their food in large mouthful, they eats large amount of it at one time.

Factors which disturb or cause the cessation of rumination:

1. During estrus (rumination falls but not stops altogether).
2. Any incident which give rise to pain, hunger, illness or maternal anxiety.
3. The periods before and after parturition.

N.B: longer rumination is interrupted or delayed, the more difficult it becomes for the animal to resume activity.

Feeding by sheep:

- -common to cattle.
- There are periods of movement + eating
- + drinking, idling and lying down and ruminating interspersed with periods of high ingestive activity.
- Rumination in sheep occurs at irregular intervals throughout 24 hours.
- When sheep are fed small quantities of food at regular intervals, show marked increased rumination and regurgitation.

Feeding by horses:

- **Horses eat by snapping the food with their incisors.**

(Horses bite their food by both the upper and lower incisors and chew them thoroughly).

- **Grazing, -cover large areas and seldom take more than two mouthfuls before moving at least one step farther.**
- **avoid grass patches covered with dung.**
- **Olfactory stimuli are important in directing feeding behaviour towards certain plants and away from contaminated are of grass.**
- **Horses select short, young -prefer more fibrous plants.**

Feeding by poultry:

- **Feeding pattern = pecking + swallowing.**
- **Poultry peck their food with jerky head movement (head is jerked upwards and backwards as the food is swallowed).**
- **Chicken eat either at the start or at the end of the day than non layers- and non layers more in the morning.**
- **The type of feeding pattern depends on how much food is stored in the crop at the end of the day and how hungry birds are in the morning.**

Feeding by poultry:

- **Ducks → with their broad bills and are more likely to nipple or scoop their food.**
- **Foraging is the word referred to the behaviour of animals when they are moving around in such a way that they are likely to encounter and acquire food for themselves or their offspring.**

The initiation of feeding behaviour

- **The initiation of feeding behaviour can be affected by the diurnal rythms and social factors but monitors of body state input -important such as:**

1. **Visual inputs.**
2. **Inputs from taste receptors.**
3. **Input resulting from stomach contractions.**
4. **Insulin effects.**
5. **Plasma glucose detector input.**
6. **Fat store monitor inputs.**

How is of ingestion limit intake

N.B: glucose levels are clearly of little importance to feeding in ruminants.

- **the rate of ingestion will limit rate of food intake;**

this will depend upon:

1. **Oral mechanics and other abilities of the animal;**
2. **The availability of water;**
3. **The nutrient qualities of the food; and**
4. **The effects of disturbances such as those due to danger of predation, attacks by insects or competition from other members of the species.**
5. **The point at which ingestion of a meal ceases will depend on gut size and input to the brain from sensory receptors, such as those which signal that the gut is full.**

The rate of food processing in GIT will depends on

The rate of processing will be the major factor influencing food intake. If no further food is need.

- **The rate of food processing will depends on:**

1. **Gut** cross-sectional area
2. **Enzyme** activities in the gut:
3. **Food quality** :if the quality is not sufficient the animal move to another place before recommencing eating.
4. The onset of **next meal** may be delayed more than the digestion time if there is input to the brain which indicates satiety. However, the next meal is accelerated, if extra food is needed due to metabolic needs, (e.g. external temperature is low).

- **The efficiency of digestion can be impaired by illness, parasites or by adverse conditions which lead to adrenal activity.**

<u>Feeding behaviour is influenced by:</u>

1. Reinforcement, both positive and negative form.
2. Food palatability.
3. Environmental and social association of feeding.

- **Full study of nutritional behavior includes:**
  1. Grazing behaviour.
  2. How feed is organized.
  3. Finding food., the ability to obtain food.
  4. Meal size and food selection.
  5. The effects of disturbances on feeding;
  6. Social facilitation;
  7. Competition of feeding behaviour; and then
  8. Drinking behaviour.

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2- Eliminative behavior

- This pattern of behavior is closely related to the general ecology of the wild ancestral species.
- Cats bury faeces and urine where dogs have a tendency to deposit them at particular spot known as scent spots.

4- Care giving (Epimelatic) behavior or Parental / maternal behavior :

- In mammals the care of the mother for its offspring, -important for the survival of the animal.
- **Epimelatic behavior** is confined to the female in our domestic animals and is usually described as "maternal".
- **All mammals allow offspring to suckle,**
  - the minimum care of this type is provided by rabbit, which visit their offspring only once per day and allow suckling for only few minutes.
  - On contrast the mother dog or cat will spend almost 24 hours/ day with her offspring (during the first week).
- The common patterns of care giving are: nursing and nest building, brooding in chicken and cleaning or grooming in dogs and cats.

5- Care-soliciting behavior

- **Most young animals -unable to take complete care of themselves they show a general pattern of behavior in the form of a call or a signal for help.**
  - **e.g. young chicken have a loud, insistent chirp, when distressed - calves bowl when distressed, - lambs bleat, puppies whine or yelp.**
- **The loudness of the call is always a clue to the amount of the distress involved.**
- **Such behavior is not entirely confined to young animals.**
- **Adult animals such as cattle and sheep will call when hungry or when separated from their kids, in this case the distress call is directed towards the human care-taker.**

6- Agonistic behavior:

- This includes,
  - fight, flight and other related reactions associated with conflict.
  - In bovine mammals, fighting is a regular part of social behavior, regulating the space between individuals and determining which males shall do the mating for the year.

- In Carnivorous dogs & cats, fighting behavior is closely related to the normal patterns of attack on prey.

- Cats keep the claws retracted in fights
- Dogs use inhibited bites in which the teeth are not firmly clamped together.

7- Allelomimitic behavior:

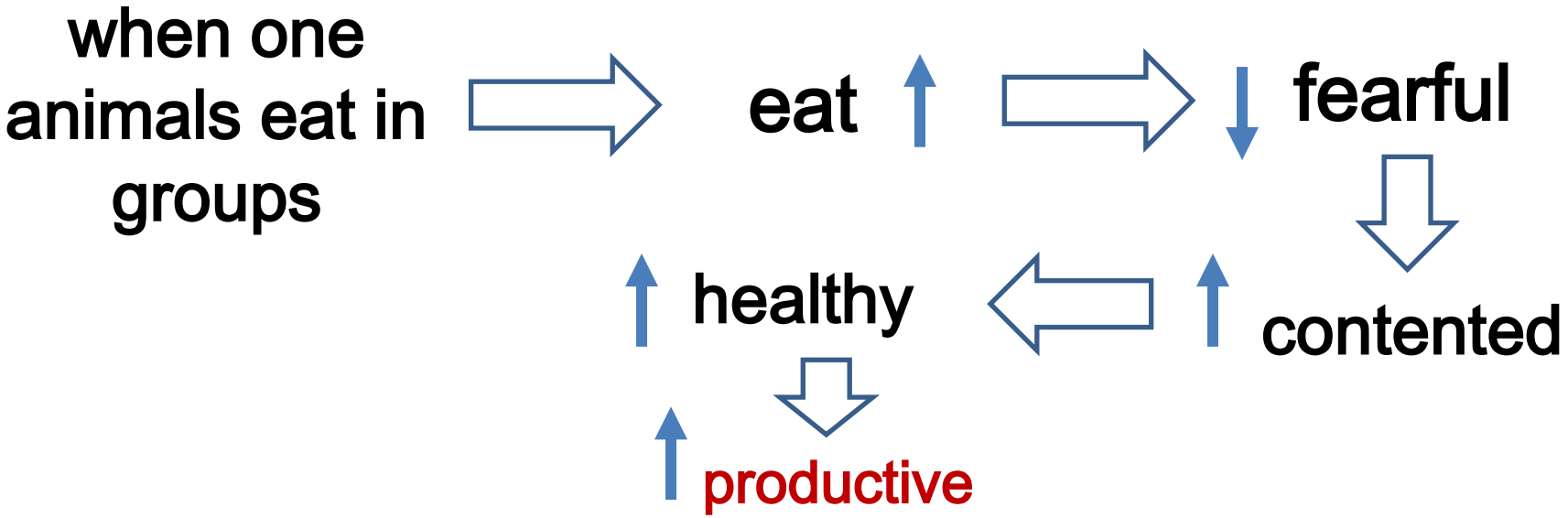
- **This consists of 2 animals doing the same thing at the same time, with some degree of mutual stimulation.**
- **The use of allelomimitic behavior in animal management during:**

1. When one animal eats in groups
2. **Milking cows in groups thus has a sound psychological basis.**
3. **In horses, to ride following the path of confident traveler. The rest will keep up without urging.**

7- Allelomimitic behavior:

- **The general function of Allelomimitic behavior is to maintain a social group & to provides safety i.e**

How allelomimetic behavior does its work?



9- Investigatory (Exploratory) behaviors:

- **All animals show a tendency to explore their environment components.**
- **-introduced to new place its first reaction is to explore it with the sense organs available to its species.**
- **An important -managing animal is to allow time for investigation,**
  - **whether a new quarter or a new individual introduced into those quarters before attempting work with them.**

- **Exploratory system:**

Exploratory system = casual factors + consequent activities:

- **Causal factor as the need in the animal for perception of environmental characteristics.**
- **Consequent activity: as the activation of the exploratory behaviour:**
  - **The receipt of sensory feedback from the environment and hence information which can be used.**
  - **Reduction of the causal factor level as a result of sensory input.**
  - **The return of the exploratory cycle to a basal level of readiness with the lodgment of the information in the memory.**

The functions of exploratory behaviour:

1- Detection of

- Water sources (places where water is found)
- Physical hazards (to be avoided)

2- Exploration of other individuals if adequate sexual and social behaviour is to occur.

3- Exploration is effective:

- anti-predator behaviour.
- for predator behaviour in investigating the characteristics of the environment.

Investigation is highest in primates and carnivores, less for rodents and lowest for reptiles.

e.g. Marsupials investigated more if they are carnivores than if they are herbivores.

10- Body Care Behaviors:

- **The care of the body is an important self-maintaining behaviors in farm animals.**
- **Acts of body care, such as scratching, shaking and licking, are very brief and are not very conspicuous as a system.**
- **Common body care behaviors:**
  1. **Grooming or preening.**
  2. **Urination and defecation.**
  3. **Sheltering from wind.**
  4. **Shading from sunshine.**
  5. **Bathing and wetting the body in heat.**

- **The behaviour of grooming has certain characteristics common to most species:**
  - **Scratching about the head parts with a hind foot is one.**
  - **Licking certain accessible parts is another.**
  - **Horned cattle frequently rub their horns and horn bases against accessible solid structures.**

- **Dust bathing in poultry is analogus, chickens will dust-bath if sand or other suitable materials is available but will dust-bath in dry food if there is no alternative.**
- **The eye, face, nose and nostrils of angulate animals receive hygienic attention by the animal rubbing its face up and down the side of appropriate foreleg, which may be held infront of other be more accessible.**
- **Rolling in horses is one form of skin attention not seen in other farm animals.**

- **In nasal cleaning,**
  - **horses don't use their tongues to clean out nostrils as do cattle, but they snort to do so.**
- **Abnormal nasal secretions in all livestock may accumulate in some illnesses.**
- **This is partly due to:**
  - **Excessive production; and**
  - **Nasal cleaning cease as the fact that the body care behaviour is suppressed in most illnesses**

Organization of the body care behaviour:

The timing of grooming behaviour is affected by various factors including hormone levels:

- **Prolactin induces grooming**
- **dopamine systems support grooming.**
- **Comfort behaviour is opiate related.**
- **Excessive self grooming occurs in young calves which are subject to acute restraint.**
- **This restraint result in dopamine-mediated excessive grooming.**

11. Thermoregulatory Behaviour in Livestock

- **The thermoregulatory behaviour is a form of body care behaviour is employed when the environmental temperature presents,**
- **the animal with a challenge to its state of comfort due to chill or wetness.**
- **In thermoregulation, animals such as:**

Thermoregulatory Behaviour in Livestock

Cattle	- stand broad side to the sunrays on a coal day. - seek the shade of trees avoiding direct solar radiations in hot day.
Farm animals	In experimental & farm situations may learn to switch heaters on or off and hence control their environmental temperature

Examples of body care relate to thermoregulation:

1- Sheep shelter below ledges in high wind,

2- Cattle in hot day shelter in close groups beneath shade trees.

3- Cattle have a predilection to stand with their feet and lower limbs in water for long time on worm sunny days.

3- Horses in strong winds turn their hindquarters.

3. Thermoregulatory behaviour in Livestock

- **Poultry**
  - **hold their wings out from the body when heated.**
  - **Huddle together if chilled**

- **European breeds of cattle are able to maintain their body temperature within the range (thermo-neutral zone) 0-20° C**

- **Tropical breeds… at about 22-37° C ambient temperatures.**

- In some species Convulsions occur at a body temperature of 41° C
- 43° C is the limit for mammalian life.
- All the vital structures are destroyed at 47° C.
- While, most body tissues can withstand marked cooling to less than 8° C.

- **Heat stroke is body temperature at which vital bodily functions are endangered.**
- **At heat stroke there is a break down in thermo-regulatory mechanisms (center).**
- **Heat exhaustion is a state of collapse due to hypotension brought on by depletion of plasma volume.**

(هبوط حاد في الدورة الدموية يؤدي الي.....)

12- Motivational Behaviors

- **Motivation is the process within the brain controlling**

1- which behaviors and physiological changes occur

2- and when.

Causal factors:

- **The actual inputs to the decision making centers.**
- **These inputs are -external changes and internal states of the body.**
- **Some casual factors' level – change rapidly -because they are altered by -changing environmental events (external causal factors).**
- **Others, such as those depend on the levels of steroid hormones in the blood changes slowly (internal causal factors).**

13- Motivational state:

- If the animal is deprived of valuable food or water its motivational state will -increase.
- This is due to input to the brain from:
  - Monitors of body fluids.
  - Sensory receptors indicating dry mouth; and may from oscillators which would prompt drinking.
  - Other brain centers indicating that water is not been possible for sometimes.

Motivational Concepts:

- For understanding motivational concepts, firstly explain:

1. **Instincts:**

- **-some inherited properties of an animal which made it act in - automatic way in certain circumstances (describing animals as automata).**

2. Drive: either:

- **a component of homeostatic control system**
- **Or as the agent causing a particular behaviour to occur.**