




Advanced Animal Behavior

ZOO-635 2 (2+0)

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Contents: An Introduction to animal behavior and types of behavior. Foraging behavior and different regimes. Behavioral physiological adaptations. Animal behavior and applied Pharmacology. The role of animal behavior in biomedical studies. Biological rhythm, homing and migration. Animal communication. Applications of Pavlov experiments. Biological control. The role of nervous system in behavior.

TERMS TO KNOW

- **Instinct** – (reflexes and responses) what the animal has at birth. Ex. Nursing, searching for food.
- **Habituation** – learning to respond without thinking, response to certain stimulus is established as a result of habituation.
- **Conditioning** – learning to respond in a particular way to a stimulus as a result of reinforcement when the proper response is made.

TERMS TO KNOW

- **Reinforcement** – a reward for making the proper response.
- **Reasoning** – the ability to respond correctly to a stimulus the first time that a new situation is presented.
- **Intelligence** – the ability to learn to adjust successfully to certain situations. Both short-term and long-term memory are part of intelligence.

A. The first type is instinctive behavior.

- Instinctive behavior is something the animal is born knowing how to do.
- Examples include fish swimming and geese migrating.
- What other examples can you think of?



B. The other type is learned behavior.

- As you can probably guess, learned behavior is *not* instinctive.
- Animals are not born knowing what to do or how to do it.
- Learned behavior is learned by experience and sometimes from a parent.
- Examples include lions and leopards learning how to hunt by watching and practicing with their mothers.

MAJOR TYPES OF ANIMAL BEHAVIOR

- Sexual
- Maternal
- Communicative
- Social
- Feeding
- Eliminative
- Shelter-Seeking
- Investigative
- Allelomimetic
- Maladaptive

SEXUAL BEHAVIOR

- The activities or actions during reproduction includes:
- **Sexual behavior:**
- Male sexual behavior
 - Pre-copulatory (courtship/libido)
 - Copulatory (erection, mounting, ejaculation, dismounting)
 - Post-copulatory (quiet period, flehmen response)
- Female sexual behavior
 - Estrous cycle (length, type, signs)
 - Ovulation (type, time)
 - Best time of mating
- **Maternal behavior (care-giving behavior, Epimeletic, attentive)**

MATERNAL BEHAVIOR

- Feeding and keeping of the offspring from danger by dam (female) which is important for survival of animal
- Pre-parturient
 - signs approaching parturition
 - Nest-building (rabbits)
 - Isolation and shelter-seeking (sheep)
- Parturient (stages of birth)
- Post parturient
 - Licking behavior (maternal licking and imprinting)
 - Sucking behavior
 - Brooding in chickens

- Low maternal behavior (rabbit)
- High maternal behavior (dog)
- Maternal behavior is innate behavior however experience play a role
- **Factors influence the expression of maternal behavior:**
 - Internal factors
 - Hereditary (gene expression)
 - Hormones (Prolactine)
 - Experience
 - External factors
 - Smell, sound, and appearance of newborn



Two classes of maternal behavior

- Polytocous species (dog, cat, rabbits, mice, rat)
 - Altracious young
 - Young entirely depend on mother
- Monotocus species (horse, cattle, camel, sheep)
 - Precocious young
 - Low maternal behavior

- **Paternal behavior:** in which both parents (male and female) take care offspring equally
- E.g. many species of birds (pigeon) and fish (take care of egg and fries)
- **Male parental behavior:** in which male take care offspring
 - Not common in animals (primates)
 - Common in birds (dark eye junco)



Agonistic behavior

- Aggression: a physical act or threat of action by an individual which cause pain or injury or reduce freedom of another individual
- Agonistic behavior: any behavior associated with threat, attack or defense (escape, passivity, aggression)
- Function of aggression in animal life:
 - To obtain food
 - To facilitate access to another sex
 - To establish social dominance
 - To win territory
 - To protect their young



Types of aggression

- Social aggression
 - who will be dominant over whom
 - To form peck order (social hierarchy)
 - Type of social grouping
- Territorial aggression
 - Keep animals out of home area
- Pain or fear- induced aggression
 - Treatment of abscess
- Irritable aggression
 - Hungary, fatigued, sick, old animals
- Maternal aggression
 - To protect young and equal to male attack



- Sexual aggression
 - Competition between animals of same species to obtain a sexual partner
 - In some species such as the cat, mating accompanied with aggression
- Predatory aggression
 - Food-getting behavior
 - Some animals attack to obtain food
- Infanticide
 - Killing of very young animals by adult
 - Female rodents kill pups
 - Rabbits eating their young



ALLELOMIMETIC

Animals of a species tend to do the same thing at the same time

Important in that a producer may observe the herd with little difficulty, also useful in driving groups of animals from one place to another

Examples of Allelomimetic Behavior

- Cattle and sheep tend to graze at the same time and rest and ruminate at the same time
- Range cattle gather at the watering place about the same time each day because one follows the other

Allelomimetic behavior (**mimesis, contagious, gregarious or mimetic**)

- In which two or more animals do the same thing at the same with some degree of mutual stimulation and coordination.
- Beneficial:
 - maintain social group and provide safety
 - Encourage feeding behavior
- Harmful:
 - Spread of vices between members of group

COMMUNICATIVE BEHAVIOR

When some type of information is exchanged between individual animals

Examples of Communicative Behavior

- Distress Calls – Lambs bleat, calves bawl, pigs squeal and chicks chirp
- Dams recognize offspring by smell
- Farm animals respond to calls or whistles of the producer
- Bulls bellow deeply to communicate aggressive behavior

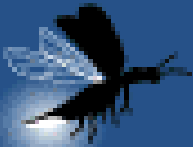
Animal Communication



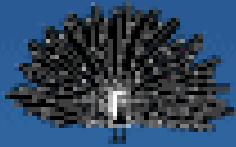
- Signaling between one animal & another
 - Greeting e.g. sniff, hug, kiss
 - Aggression e.g. charge, bite, hit, fight
 - Non-aggression e.g. patting, head butting, stroking
- Verbal signaling (vocalization)
 - E.g. bark, howl, hoot, chirp
- Non-verbal signaling
 - E.g. body, head, ear, & / or tail position
 - Showing teeth, smiling, sign language



Examples of Animal Communication



Fireflies glow to attract mates.

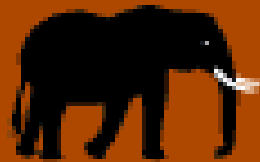


Peacocks use their elaborate tails during courting rituals.



Cobras inflate their hood to scare other creatures.

Visual



Elephants use their trunks to talk to other herds over long distances.



Male whales use their song to communicate with females.



Wolves howl to call to other wolves in the pack.

Auditory



Dogs lick their pups to bond, clean and stimulate their development.



Baboons use touch to show affection and groom each other.



Horses kick other horses to establish dominance.

Tactile



Cats rub against objects to mark them with their scent.



Ants use pheromone trails to follow each other.



Skunks use their signature smell to deter predators.

Chemical

Motivation (motivated behaviors)

- Behavior of maintenance and reproductive behavior related to what is called **motivation**
- Motivation: the internal state of animal that causes the immediate behavioral response
- Each organism born have a variety of biological needs
- **Need**: something that is required physiologically e. g. need for food, water, sex
- When the need is not satisfied, **the drive** is aroused



- **The drive:** is psychological consequence of need
- Once the animal in high drive state (motivated), the animal start to move
- So we can observe 3 stages in animal's behavior:
 1. The searching phase (Appetitive behavior)
 2. Consumatory behavior (achievement of the goal)
 3. Phase of quiescence (satiation)

SOCIAL BEHAVIOR

Includes “fight or flight” and aggressive and passive behaviors between animals

Includes interactions with other animals, humans and behavior during handling and restraint

Examples of Social Behavior

- Males of all farm animals fight when they meet other unfamiliar males of the same species
- Cows, sows and mares develop a pecking order, but fight less intensely than males
- Cows withdraw from the herd to a secluded spot just before calving
- Almost all animals withdraw from the herd if they are sick

FEEDING BEHAVIOR

Exhibited by animals when eating and drinking

(Ingestive Behavior)

Examples of Feeding Behavior

- Cattle graze 4-9hrs/day, ruminate 4-9hrs/day, regurgitate 300-400 boluses of feed per day
- Sheep and goats graze 9-11hrs/day, ruminate 7-10hrs/day, regurgitate 400-600 boluses of feed per day
- Cattle usually don't go more than 3 miles away from water
- Sheep may travel as much as 8 miles a day

ELIMINATIVE BEHAVIOR

Elimination of feces and urine

Examples of Eliminative Behavior

- Cattle, sheep, horses, goats and chickens eliminate feces & urine indiscriminately
- Hogs eliminate feces in definite areas of a pasture or pen
- Cattle, sheep, goats and swine defecate while standing or walking, urinate while standing, but not walking
- Cattle defecate 12-18 times/day, urinate 7-11 times/day
- Horses defecate 5-12 times/day, urinate 7-11 times/day
- Animals defecate & urinate more when stressed or excited.
- Animals lose 3% of their live weight when transported to & from market points (Shrink)

SHELTER-SEEKING BEHAVIOR

Examples of Shelter-Seeking Behavior

- Animals crowd together in snow and cold winds
- Animals seek shelter of trees when it rains
- Cattle and sheep seek shady area for rest and rumination if weather is hot
- Hogs find a wet area if weather is hot
- In extreme situations, animals pile up to the extent that some get smothered

INVESTIGATIVE BEHAVIOR

Examples of Investigative Behavior

- Pigs, horses and dairy goats are highly curious, investigate any strange object, approach carefully, slowly, sniffing and looking as they approach
- Sheep are less curious and more timid

Exploratory behavior (investigatory behavior)

- Explore their environment to obtain information for survival by using sense organs
- Differ between species and individuals
- Allow time for investigation in new area



MALADAPTIVE BEHAVIOR

Animals that cannot adapt to their environment, exhibit inappropriate or unusual behavior

Examples of Maladaptive Behavior

- Chickens and swine in extensive management (confinement) systems resort to cannibalism, removal of tails is a prevention method
- Buller-steer syndrome – steers that have been castrated before puberty demonstrate masculine behavior