Abnormal behavior
(animal welfare)

MSc Ethology

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A phenomenon which is surprisingly difficult to define

• A behavior is abnormal, if
  – Represents a minority in the population
  – Lowers the fitness of the actor, or/and
  – Causes physical/mental/social harm to the actor, or/and
  – Caused by an illness/injury/malformation

Rather convincing criteria
Or not?
Abnormal behavior in humans:

- Lowe
  - Tra triggers?
  - Adrenalin junkies
- Done by a minority?
  - Be unique! Or… Follow the trend!
- Causes harm?
  - Traditional altruists
- Caused by physical/mental conditions?
  - Do not discriminate!
In case of humans...

• What is 'normal'?
  – Social/ cultural factors may modify
  – Against the 'rules' is not necessarily abnormal
  – Abnormal behavior must be defined on the basis of biology
  – 'Abnormal' implies 'undesirable' → needs to be changed
  – Caution is needed therefore before labeling
Different explanations (mostly human) abnormal behavior

**Biological explanations**
Abnormalities must have a biological reason
Infection, brain damage, biochemistry, genetics

**Behaviorist explanations**
All (bad) behaviors are learned (born with tabula rasa)
Conditioning (classical, operant)
Social learning

**Psychodynamic explanations**
Abnormal behaviors have psychological and not physical causes
3 main sources: inner conflict, childhood experiences, unconscious motivations

**Cognitive explanations**
Abnormal behavior is a consequence of an erroneous thinking about events and their outcome
Irrational thinking, errors of logic
Abnormal behavior in animals

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Abnormal behavior in animals

• A behavior is abnormal, if
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Abnormal behavior in animals

- A behavior is abnormal if it causes physical/mental/social harm to the actor.
- Caution is needed in case of:
  - 'Self-sacrifice'
  - Costly signals
  - Dangerous behaviors
Why do we need animal welfare research?

- **Animal welfare**
  - Complex term
  - Ethics, politics, regulation
  - Scientific research (ethology, physiology, anatomy etc.)

- **Abnormal behaviors**
  - Ethology, veterinary science

- **Stress**
  - Ethology, physiology, pharmacology, fundamental research
Stress

• Originally a term in physiology (Cannon, Selye) – response to potentially dangerous stimuli

• Dual response
  – Sympathetic nervous system + adrenalin $\rightarrow$ cardiovascular and digestive system
  – ACTH (hypophysis) – corticosteroids (‘stress-hormones’) $\rightarrow$ metabolism

• Chronic stress $\rightarrow$ harmful

• Stress can be interpreted in a non-physiological framework, too
Stress can be regulated through behavior

- Weiss (1971) experiments on rats with electric (painful) stimuli
- Intensity of stress depends not only on the strength of the stressor
  - Predictable shock – weaker stress
  - Controllable shock – lower response
  - *Control must be adequate to the type of stress stimulus*
Stress and personality

• Stress reaction depends on the individual
• Two main types:
  – (A): sympathetic reaction is dominant
  – (B): weaker sympathetic response
• In human psychology:
  – **Extroverted** (active problem solving, tendency for aggression)
  – **Introverted** (more peaceful, supressed reaction)
Animal personality and stress

• **Tupaia** males: dominant, active submissive, passive submissive
  – Low survival rate for passive submissives

• Restraint test for piglets
  – Fighters (lower meat quality later)
  – ’Peaceful’ ones (gives better quality meat even among more stressed conditions)

• Stress-related mouse types
  – Resident male: instant attack vs. no attack
  – Confident in maze vs. freezes at every novelty
Here is a tupaia
Proactive vs. Reactive personalities

• Proactive
  – In case of problem it uses old routines (rigidity)
  – Aggressive
  – Sympathetic system dominates
  – Chronic stress $\rightarrow$ cardiovascular illnesses

• Reactive
  – In case of problem flexible reaction, quick adaptation
  – Peaceful
  – Weaker sympathetic response
  – Chronic stress $\rightarrow$ compromised immune system, infections
Abnormal behavior in domesticated animals

• But what is normal?
  – Behaviors (acquired and inherited) that proved to be adaptive along the evolution from the aspects of fitness and survival

• How can we tell, what is normal in a domesticated animal?
  – The behavior of its wild ancestor (?)
  – The behavior of feralized population (?)
  – The behavior expressed in natural habitat (?)

Some species are ’artificial’
  For example: dogs
  Natural habitat = human habitat
Typical abnormal behaviors

- Common type = Normal?
  - If most of the individuals are kept among unnatural conditions → most common behaviors may be abnormal

- Stereotypic behaviors
- Abnormal aggression
- Cannibalism
Stereotypic behavior

• Seriously repetitive, constant, without obvious goal or benefit
• E.g. cribbing horses, tonguerolling cow, gridchewing pig, pacing chickens, foxes...
• Caused by weakly stimulating environment
• And/or unsatisfied, however highly motivated behavioral needs
  – Feeding, nesting, hunting, territoriality
• Do stereotypic behaviors harm welfare?
  – Severe stereotypies cannot be amended by enriched environment
Cribbing was not possible to break with Ad libitum food (hay and salt)

Stereotypic behaviors release dopamine (pleasure)
Abnormal aggression

Aggressive behavior is often normal. Most domesticated species is lesss aggressive than its ancestor.

Abnormal aggression is caused by:
- crowded keeping
- constantly changing groups (horses, cattle, pigs)
- weaker (loser) individuals cannot leave
- some breeds, types were selected for high aggression

Many people are highly sensitive to aggressive behavior
Cannibalism

- **Occurs among natural circumstances!**
  - Lack of food (infanticide, siblicide)
  - Competition (others’ offspring)

- **Domesticated animals**
  - Usually is is **NOT out of control aggression!!!**
  - Crowdedness + stress + non-stimulating environment (pig tail biting)
  - Crowd + stress + aggression + conditioning (feather plucking and cloacal cannibalism in hens)
  - Improved environment may help (?)
  - Functional remedies (tail cropping, debeaking)…

![Image of a chick being debeaked.]
Abnormal behavior – approach from Tinbergen’s 4 aspects

- E.g. feather plucking in mass-produced chicken
  - Mechanism *(what happens?)*
  - Ontogeny *(how does it develop?)*
  - Function *(why is it ,adaptive’?)*
  - Evolution *(is it present in other (related) species?)*
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