The Neurophysiology of Anxiety and its Management. A.J. O’Shea BVSc MANZCVS Slide 4

[Image of a neuron with text: "Action potentials arriving at the presynaptic terminal cause voltage-gated calcium ion channels to open."]

Additional text or notes would go here.
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[Diagram showing relationships between Aggression, Avoidance Behaviours, Cortisol]

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Avoidance Behaviours

1. Lying down leg up
2. Wrapping abdomen, tail tucked under
3. Creeping ears back
4. Walking away
5. Turning body away, sitting pawing
6. Turning head away
7. Yawning, blinking, nose licking

Body Language of Avoidance
Definitions

Fear – is a normal automatic emotional and physical reaction in response to an imminent threat. It leads to the animal fleeing, fighting or freezing – abnormally it may lead to the animal fiddling. Fears can be wound up or wound down.
Definitions

- **Fear** – is a normal automatic emotional and physical reaction in response to an imminent threat. It leads to the animal fleeing, fighting or freezing – abnormally it may lead to the animal fiddling. Fears can be wound up or wound down.

- **Anxious behaviour** – is a normal automatic emotional and physical reaction due to the apprehensive anticipation of a future threat that passes when the threat is removed or realized. It prepares the individual to react faster and possibly better if the threat should become imminent.
Would you be anxious?
What does a normal animal do in any situation?
It receives information from its senses, assesses the situation, by searching its memories and their associations to determine how it should react this time.
If it has memories of similar situations

What did it do?

If it lead to a good result

the animal will repeat this behaviour

If it lead to a bad result

The animal will try a different behaviour

To build its composite memory as to how it should behave to get a good result

To Learn!
If it has no memories that are similar, it will investigate the environment collecting information until it has enough information to trigger a memory. Or it will try behaviours on to see what works.

**Dogs:** bark, paw at it, sniff it.

**Cats:** hide from it – pounce on it, Sniff it, etc.

So they learn what to do next time!
An anxiety disorder is an abnormal automatic emotional and physical reaction to an apprehensively anticipated future threat whenever the individual does not have appropriate memories to determine how it should react to get a “predictable” good result.
This means it will
have a partially turned on fear reaction,
that is automatic, physical, emotional reaction
display avoidance behaviour / aggression
have an activated amygdala
be hyper vigilant
be hyper reactive – aroused
have the emotional response and memory of fear
What do we see?
Some animals spend their whole life in an anxious state.

- Crawling ears back
- Walking away
- Turning body away
- Sitting, pawing
- Turning head away
- Yawning, blinking, nose licking
What does an animal with an anxiety disorder do in any situation?
It receives information from its senses, assesses the situation, searches its memories and their associations to determine how it should react this time.
Animal with an Anxiety Disorder

If it has memories of similar situations
  What did it do?
  If it lead to a good result?
    the animal will repeat this behaviour
  If it lead to a bad result?
    The animal will apprehensively anticipate future problems

POOR LEARNING
Animal with an Anxiety Disorder

If it has no memories that are similar,
It will apprehensively anticipate future threats

POOR LEARNING
Types of anxiety Disorders

- Some animals with anxiety disorders have broad experience and therefore have a lot of memories with the associations of what to do to get good outcomes.
  - These animals only show anxiety in a limited number of specific situations
    - Veterinarians offices
    - Down the local park
    - New Dogs
    - New situations
    - Different situations
Some animals with anxiety disorders have limited experience and only have a few memories with associations of what to do to get good outcomes.
- Eg animals with poor socialization, poor experience
- These animals show anxiety in many more situations
  - New situations
  - Different situations
  - Change in routine

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Some animals with anxiety disorders have limited experience and only have a few memories with associations of what to do to get good outcomes.

- Eg animals with poor socialization, poor experience
- These animals show anxiety in many more situations
  - New situations
  - Different situations
  - Change in routine
  - New flowers
  - Different food bowl
  - Coping strategies removed
    - Separation distress
Types of anxiety Disorders

- Some animals with anxiety disorders have such poor experience they have little or no memories with associations of what to do to get good outcomes.
  - Eg animals with very poor socialization, social deprivation, very poor experience,
  - That they show anxiety in literally any situation where there is a slight change.
Anxiety disorders have been associated with
- Hyperactivity of the amygdala
- Diminished activity of the Hippocampus
- Poor learning
Types of things we see

- Destruction
- Injury
- Self trauma
- Poor Learning — hyper reactivity – unruly behaviour
- Distress
- Aggression
- Fear
- Territorial
- Protective
- Dominance
- Protective
- Age related Anxiety
Prevention of Anxieties Fears and Phobias

- Pet Selection
- Early Best Practice socialization
- Early Best Practice Habitation
  - To a wide variety of situations and noises
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Treatment and Management of Anxieties

› Early Intervention
Treatment and management of Anxiety

- **Management** of the environment
- **Modifying** the Behaviour
- **Medicating** the pet
Thank you for your time!

Any Questions?
I would love to discuss any cases you may have!

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