



Problems with understanding anxiety in others

**PROF DANIEL S. MILLS BVSC PHD CBIOL
FRSB FHEA CCAB DIP ECAWBM(BM) FRCVS
EUROPEAN & RCVS RECOGNISED SPECIALIST
IN VETERINARY BEHAVIOURAL MEDICINE**

DEPT OF LIFE SCIENCES
UNIVERSITY OF LINCOLN LN6 7DL
UK

Overview

Differing perceptions of anxiety

Fear and fear related anxiety – a psychobiological perspective

Frustration and frustration related anxiety – a psychobiological perspective

Fear and Frustration interactions with Anxiety

Management of anxiety

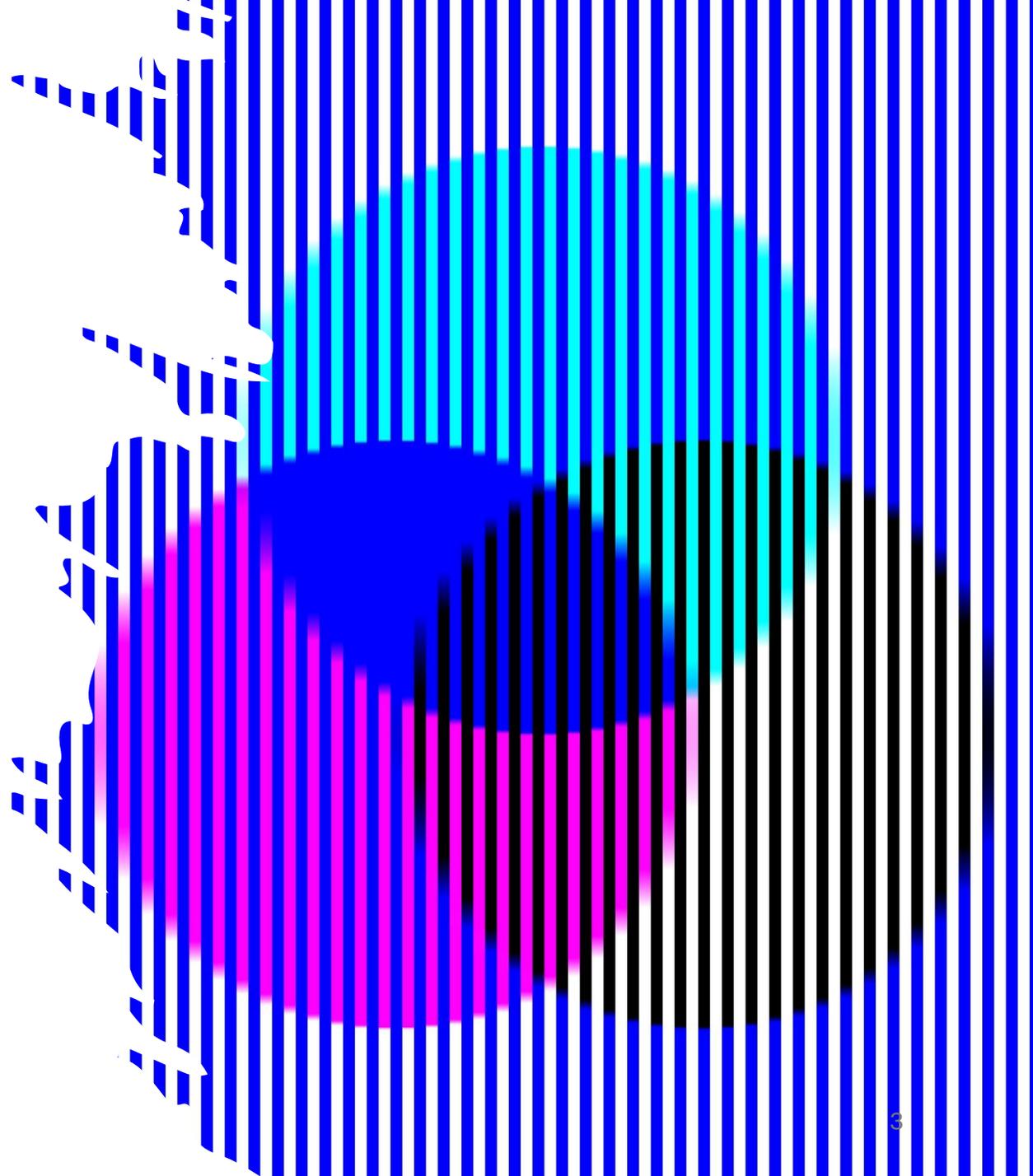
Case study



Our perceptions create
our reality
but perceptions are not
objective

- It is hard to change our opinion

illusionary yellow by Akiyoshi Kitaoka



The limitations of words in communication

The value of words
in communication is
dependent on their
agreed meaning

Common usage
can bleed into
our scientific thinking

Abnormal
Stress
Anxiety
Fear

Mills, D. S. (2025).
A psychobiological framework
for defining discrete emotions
in animals.
Applied Animal Behaviour Science,
286, 106595.

Nature of fear and anxiety

- The term “fear” is often used colloquially to describe the anticipation of something unpleasant
 - This is not a scientific definition
 - This is different to its psychobiological definition
- The state of “anxiety” is often used clinically to describe a state of prediction of potential harm
- In humans, our anxieties are often subject to cognitive elaboration
 - The end phenomenon is often removed from its psychobiological origins
 - We often anthropomorphosise the cognitive elaboration of emotions to non-human animals



Some forms anxiety are medically categorised:

- Specific Phobia
 - Marked fear or anxiety about a specific object or situation
- Panic Disorder
 - An abrupt surge of intense fear or intense discomfort that reaches a peak within minutes, symptoms include fear of dying or losing control
- Separation Anxiety Disorder:
 - Developmentally inappropriate and excessive fear or anxiety concerning separation from those to whom the individual is attached
- Social Anxiety Disorder
 - Marked fear or anxiety about one or more social situations in which the individual is exposed to possible scrutiny
- Generalised Anxiety Disorder
 - Excessive anxiety and worry (apprehensive expectation), occurring more days than not for at least 6 months, about a number of events or activities (such as work or school performance).

Nature of fear and anxiety

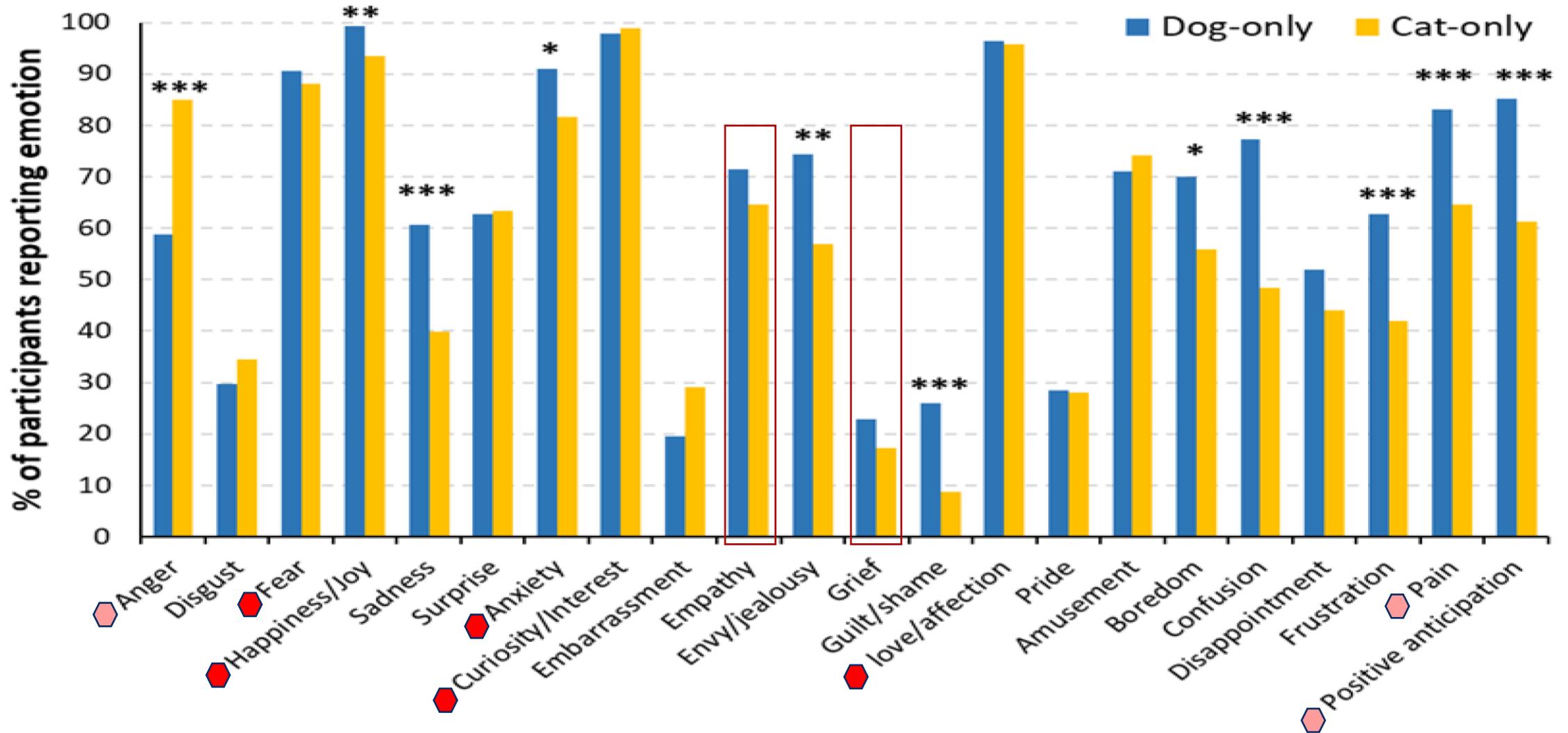
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Article

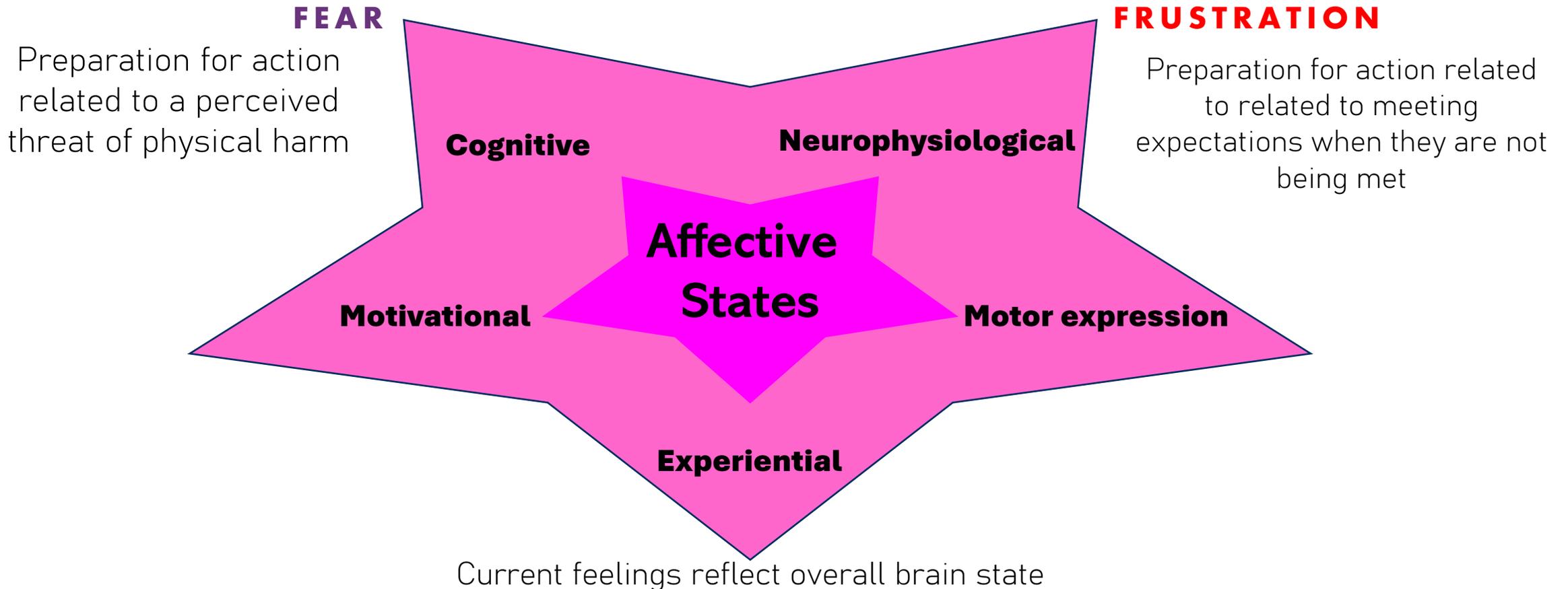
Owners' Beliefs regarding the Emotional Capabilities of Their Dogs and Cats

Olivia Pickersgill ¹, Daniel S. Mills ¹ and Kun Guo ^{2,*}

<https://doi.org/10.3390/ani13050820>



Psychobiological Definitions of Fear and Frustration



Evidence of psychobiologically distinct forms of anxiety: a psychopharmacological perspective

- Neuropeptide S reduces environmental (elevated +maze) anxiety but not social anxiety in rats
- Benzodiazepines generally reduce “anxiety” in relation to predator odour, while serotonergics*, opiates and cannabinoids+ generally do not
 - * Long term use of fluoxetine or imipramine may have a mild effect
 - + Cannabinoids and MDMA may increase anxiety in this context

Dielenberg, R. A., & McGregor, I. S. (2001). Defensive behavior in rats towards predatory odors: a review. *Neuroscience & Biobehavioral Reviews*, 25(7-8), 597-609.

Lukas, M., & Neumann, I. D. (2012). Nasal application of neuropeptide S reduces anxiety and prolongs memory in rats: social versus non-social effects. *Neuropharmacology*, 62(1), 398-405.

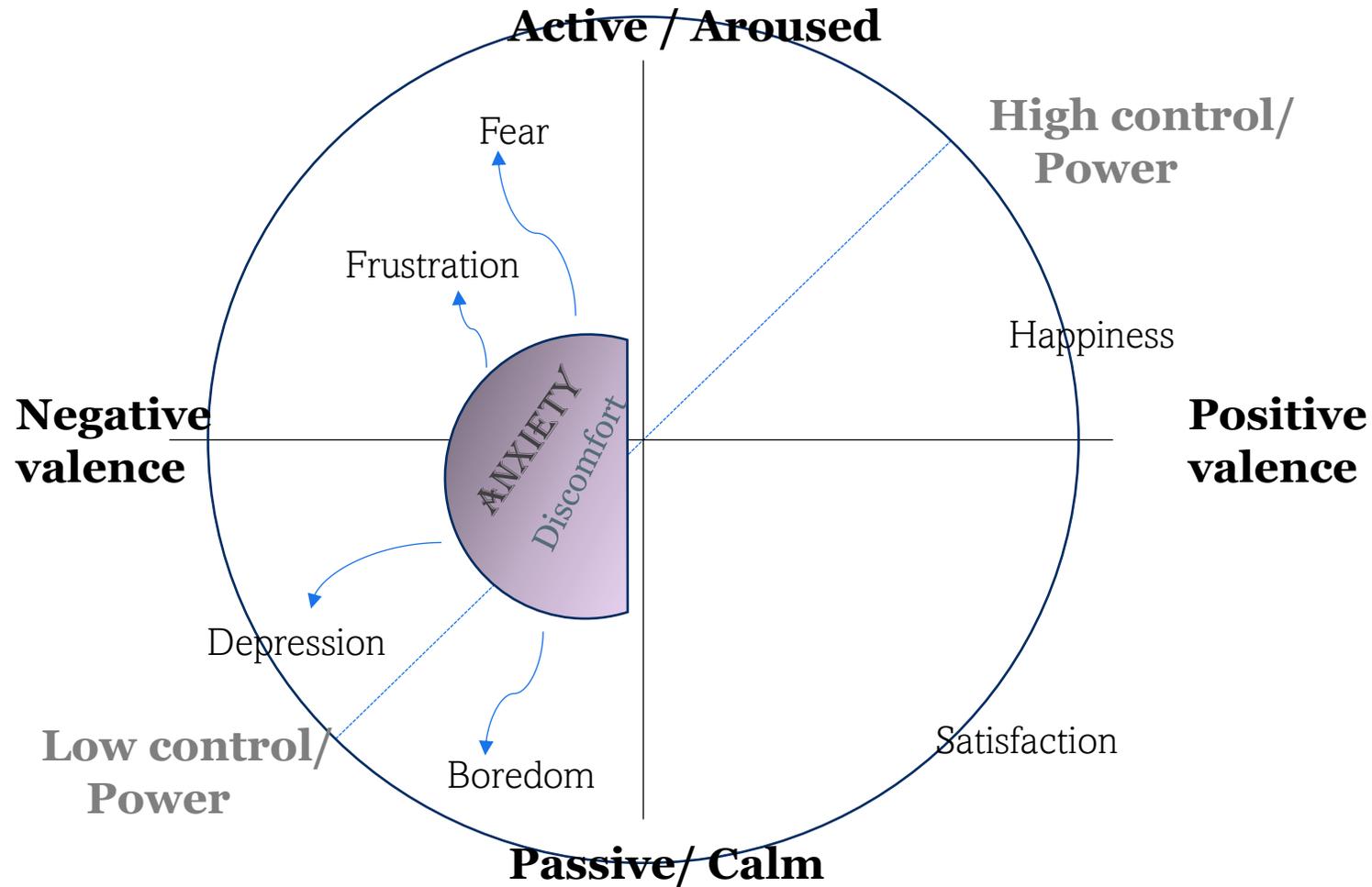


Summary

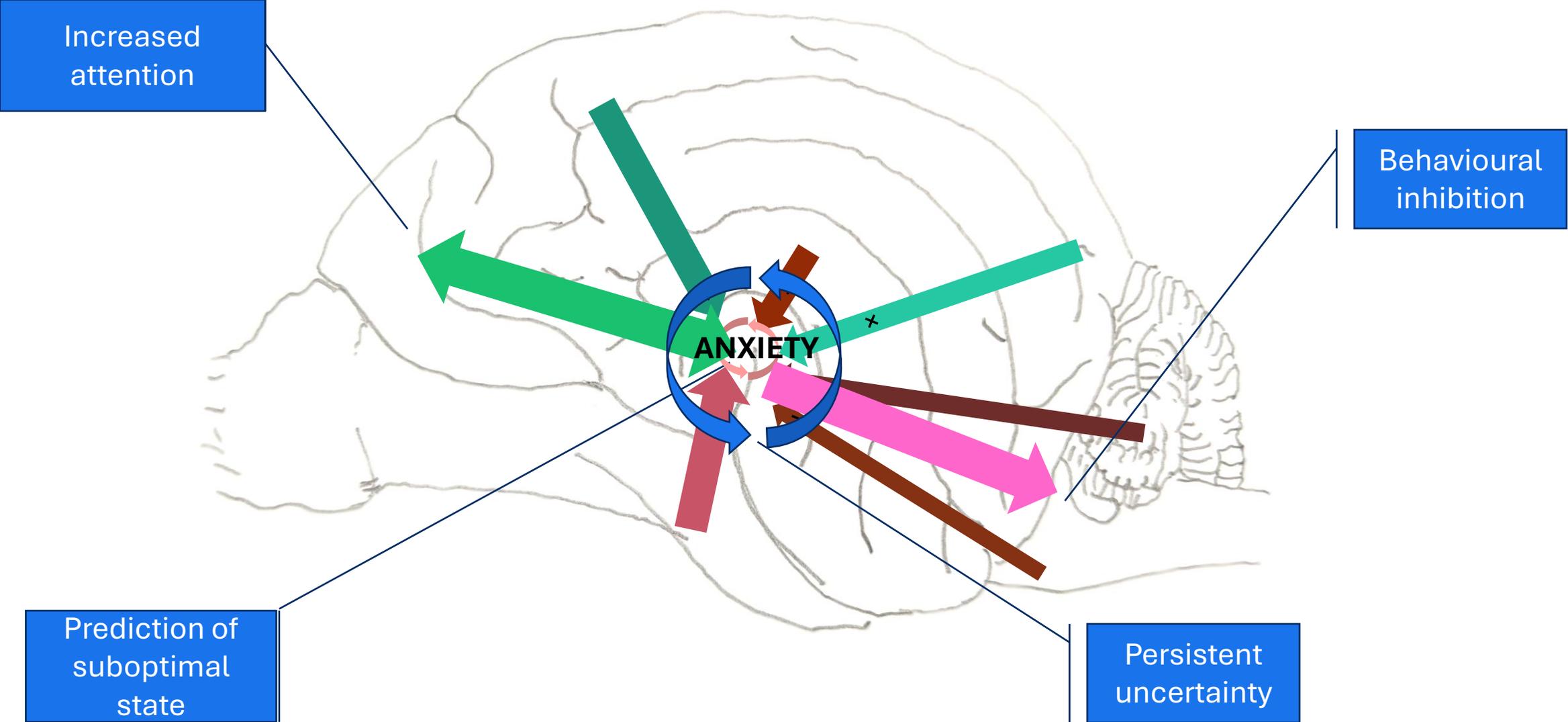
- We often associate the term “anxiety” with fear, i.e. the anticipation of harm /prediction of punishment, but this might reflect the end point of a very human cognitive elaboration of uncertainty rather than its more immediate emotional basis
 - Humans often “fear the worst” when anxious
- In the absence of abstract cognitive elaboration, the emotional state of “anxiety” typically reflects either:
 - Prediction of potential harm
 - Poor predictability/control over the environment
 - A feeling that things are not right, although the reason why and thus solution may not be clearly apparent

This may or might or might not be related to a socially relevant stimuli

Discomfort and Anxiety: A Psychobiological Perspective



Anxiety response: A Psychobiological Perspective



Fear and Fear-Related Anxiety

A Psychobiological Perspective:
Control over risk of harm

Components of Fear

Appraisal:

Potential physical threats to the animal – i.e. a risk of physical harm

ECS: Looming/ shadow projection, spatial properties depending on species (e.g. open areas, height etc), predator odour, unpredicted intense stimuli or changes in the environment, large discrepancies in expectation, species typical threat behaviours and signals

Arousal:

Pervasive increase which is correlated with changes in intensity in the stimulus and subsequently modified by evaluation of ability to cope

Behaviour tendencies:

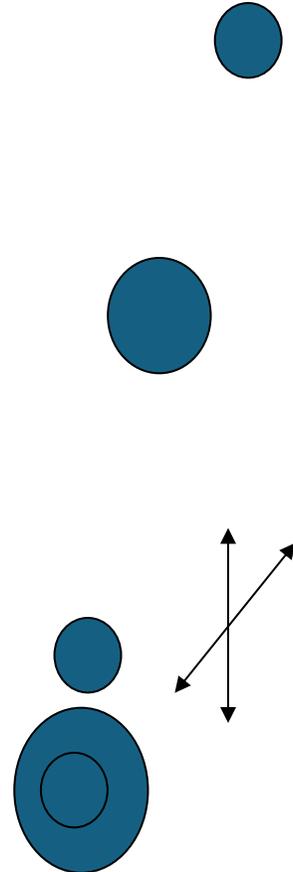
Prioritisation of self-preservation through escape, non-escalation or non-detection, self-defence if escape not possible

Communication:

Disengagement/avoidance, deference, appeasement, threats of harm associated with self-defence if escape not possible

Some stimulus characteristics associated with potential threat (fear)

- Trajectory
- Mass
- Velocity
- Direction
- Looming
- Acceleration



Frustration and Frustration-Related Anxiety

A Psychobiological Perspective:

Barriers to autonomy

Components of Frustration

Appraisal:

Threats to autonomy: imposition on or restriction of the animal's ability to choose what to do; uncertainty, denial or absence of things that the animal wants, inability to execute a motivated behaviour / loss of control over potential rewards

- **ECS:** thwarting/restrictions to movement, touch/surface irritation, approach towards/ crossing key spatial boundaries (e.g. personal space, territory), barriers to resources and reinforcers, unmet reward expectations (inc insoluble problems), novelty associated with approach-avoidance conflict

Arousal:

Typically sharply increased initially, with subsequent modifications made on the basis of the animal's perceived ability to cope

Behaviour tendencies:

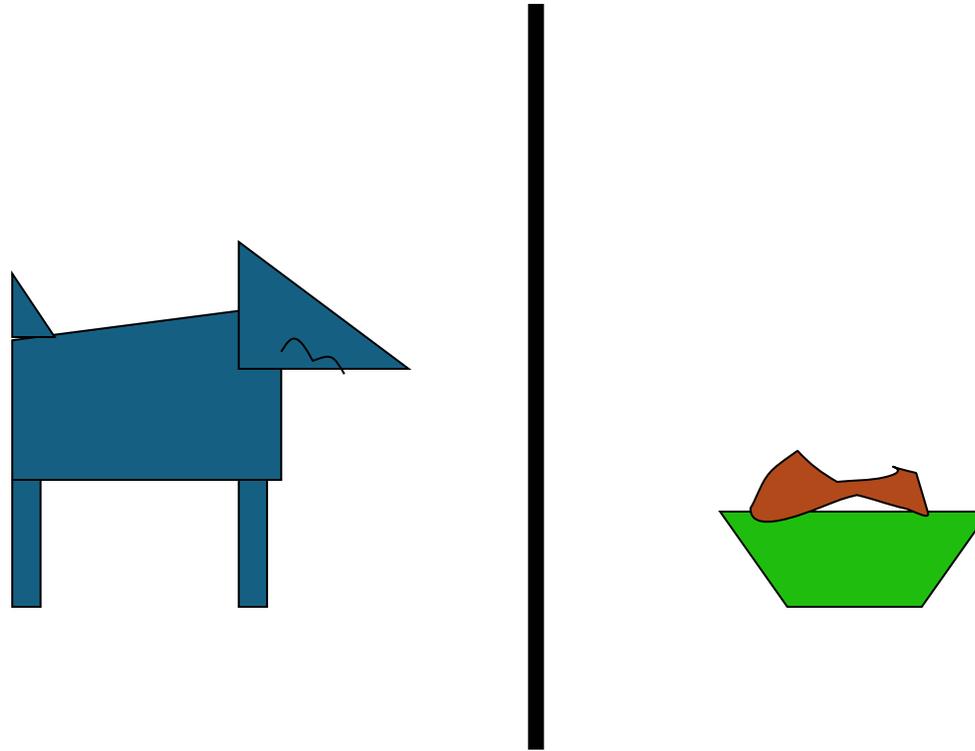
Vigour and goal directedness/ focus to the exclusion of other potential goals, ?risky behaviour, elicitation of social support, ambivalent and/or displacement behaviour, redirected behaviour which may be very intense when arousal is very high (e.g. lack of access to safety)

Communication:

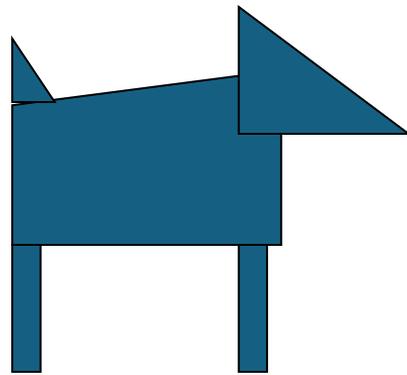
Resource Holding Potential (signs of biological fitness), resource/goal focus especially in relation to ownership and/or possession, threats of harm, social referencing



Some stimulus characteristics associated with potential frustration: Reward related 1 (Archer 1976)

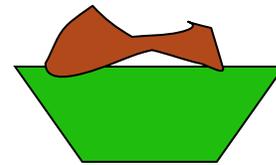
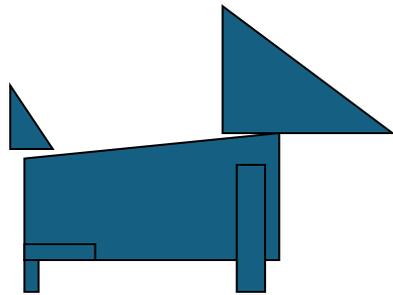


Some stimulus characteristics associated with potential frustration: Reward related 2 (Archer 1976)

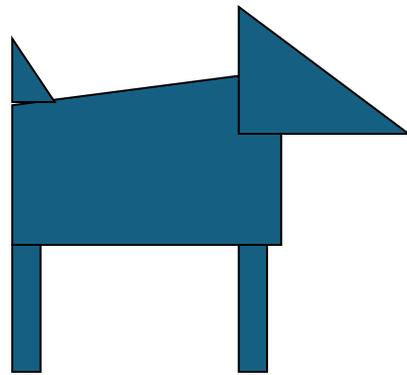


Down!

Some stimulus characteristics associated with potential frustration: Reward related 2 (Archer 1976)

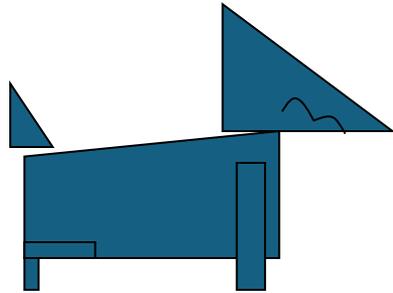


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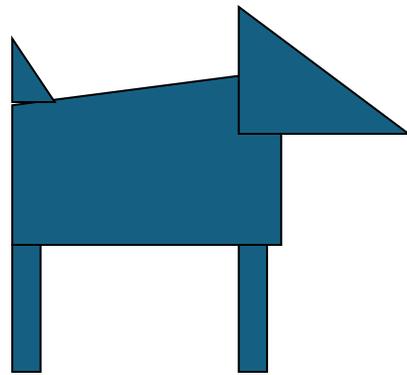


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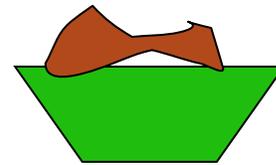
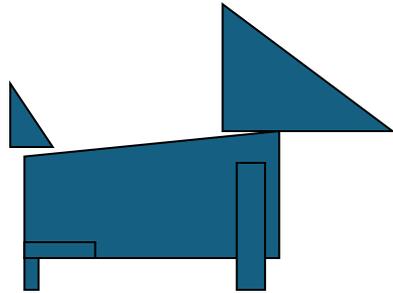


Some stimulus characteristics associated with potential frustration: Reward related 3 (Archer 1976)

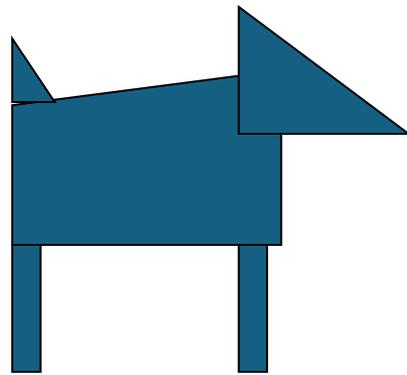


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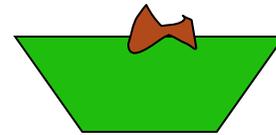
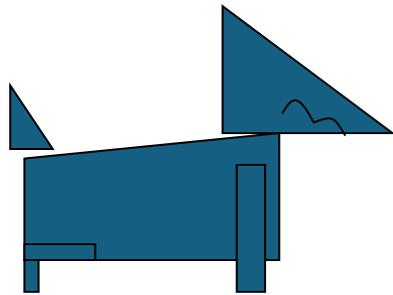


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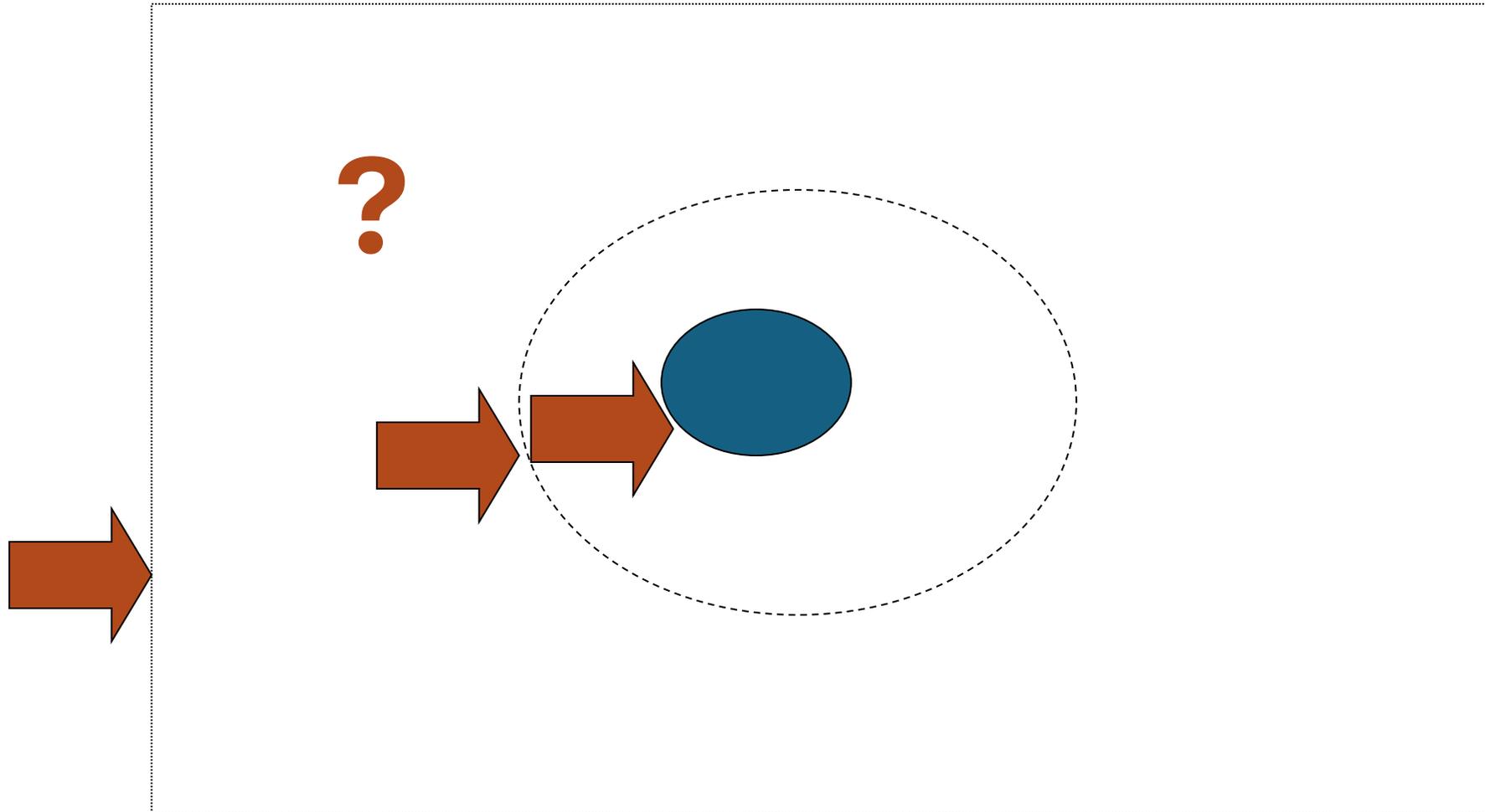


Down!

Some stimulus characteristics associated with potential frustration: Reward related 3 (Archer 1976)



Some stimulus characteristics associated with potential frustration: Spatial control 1-4 (adapted from Archer, 1976)



Motivational conflict

“Conflict anxiety”

30

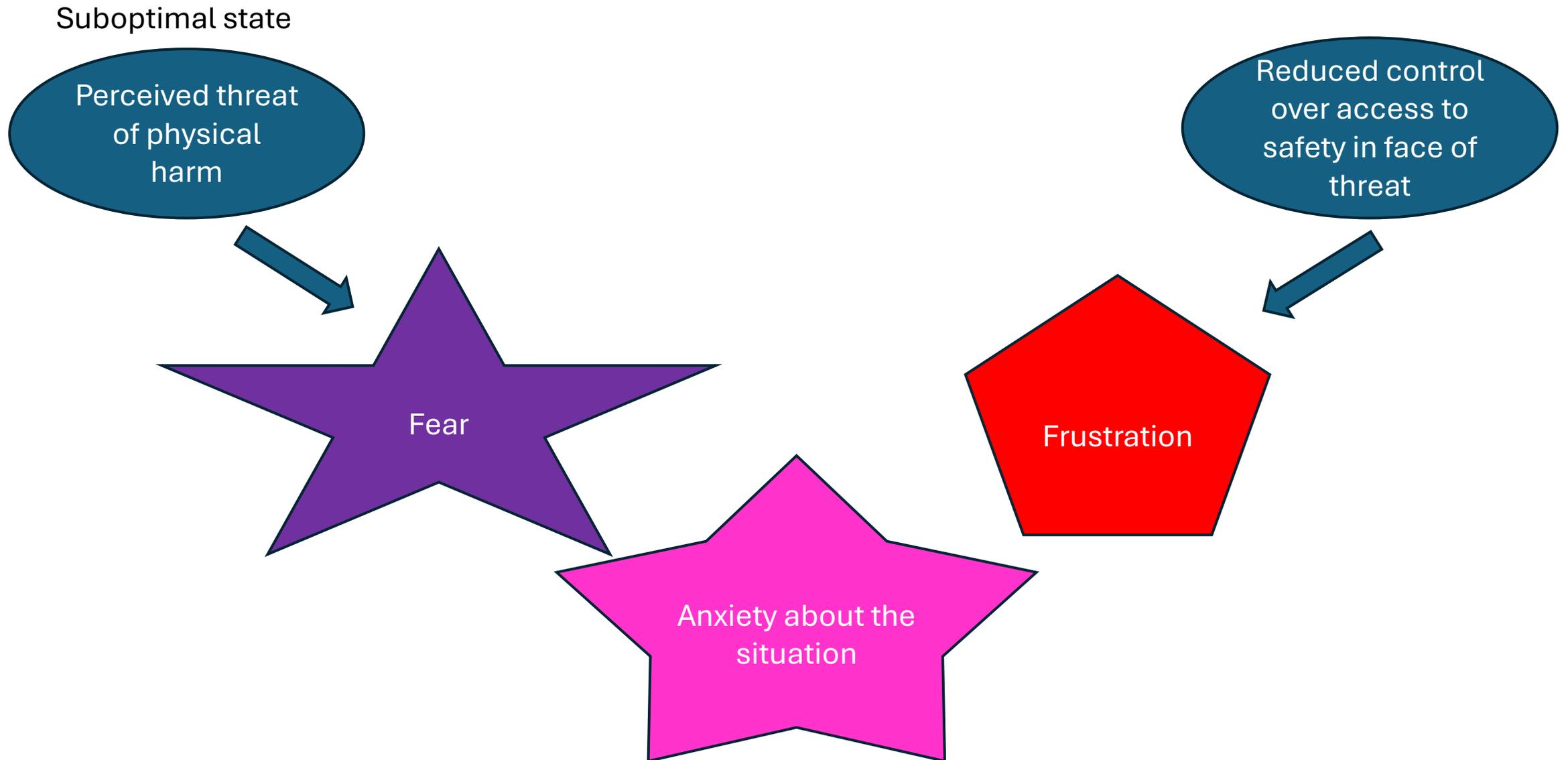
- The inability to execute two or more conflicting activities (behavioural goals/ motivations)
- Different types of competing motivations which cannot be satisfied simultaneously
 - Approach-Approach – different stimuli
 - Avoid – Avoid – different stimuli
 - Approach – Avoid – same stimulus, different elements or different stimuli spatially related
- In the real world, individuals may face multiple conflicts at the same time



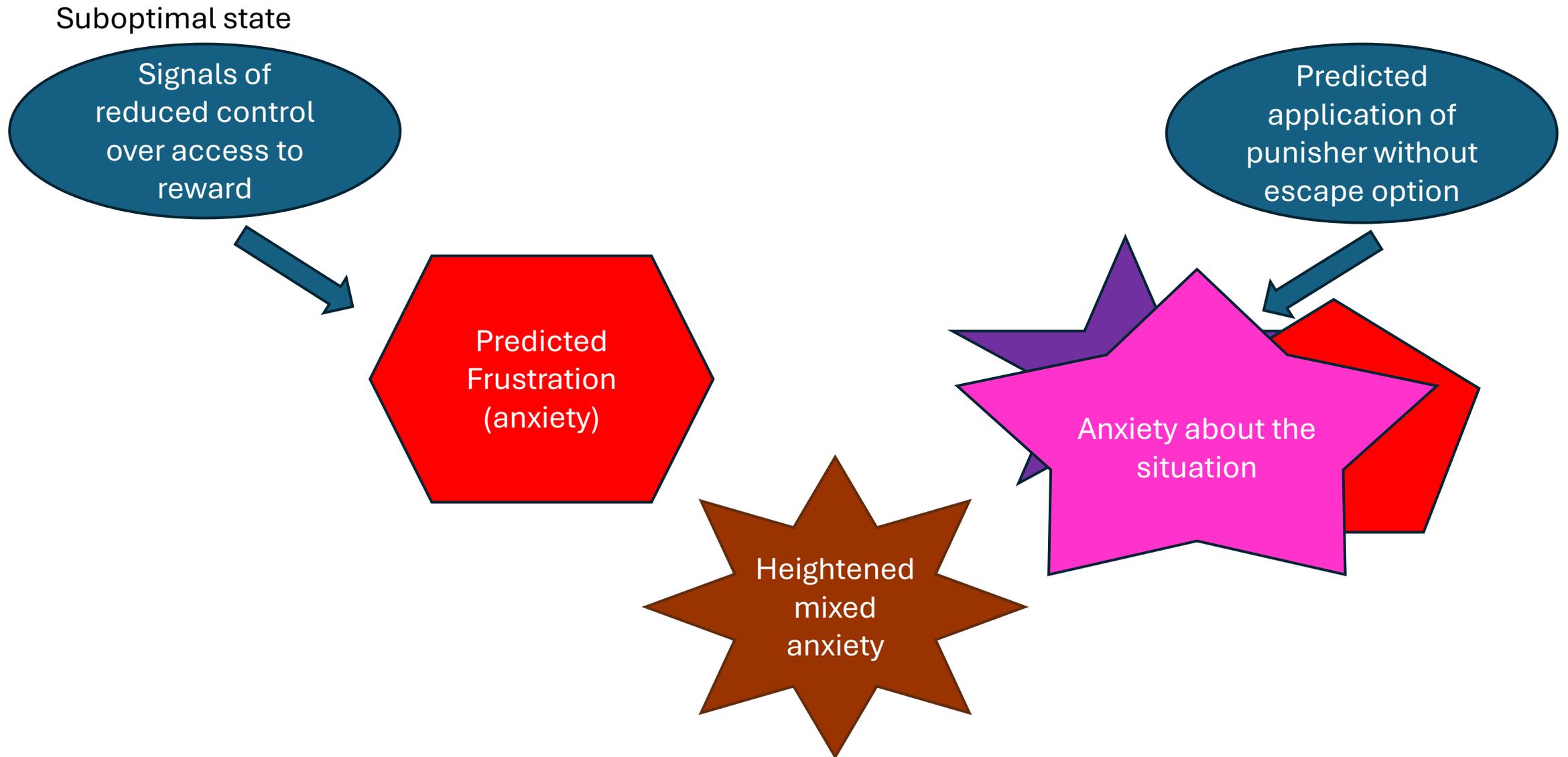
Fear and Frustration Interactions with Anxiety

Sequencing of emotional responses, a psychobiological perspective:

Interaction of frustration with fear & the creation of anxiety



Interaction of fear with frustration & the creation of anxiety





The general state of anxiety

A Psychobiological Perspective

- More often, anxiety reflects a state of reduced control or poor predictive power
 - It describes an actual or anticipated loss of autonomy in relation to control over key resources / prediction of loss of rewards
 - From a psychobiological perspective, this is more closely aligned to the processes involved in the development of frustration than fear
 - Treatment then needs to focus on **handling restrictions to reward expectancy**
- Less often, anxiety is associated with an impending threat of physical harm
 - From a psychobiological perspective, this is more closely aligned to the processes involved in the development of fear than frustration.
 - Treatment then needs to focus on **reducing the perceived severity of this threat**
- If “anxiety” is associated with certain socially significant stimuli, then the brain has a qualitatively different pattern of activity, based on the type of social relationship that exists with the individual

Anxiety Escalation Ladder

Novel encounter

Derousal L1

Slow movement

Yawning

Looking away

Head dipping

Blinking

Lip licking

Derousal L2

Sit/Lie down

Further slowing

Freezing

Turning away

Curving

Limbering up

"Play bow"

Shaking off

Ambivalent behaviour

Frustration

Barking Lunging

Whining Snorting

Bouncing

Redirected behaviour

Contact

Snapping

Nipping

Biting

Displacement behaviour

Sniffing

Scratching

Posturing

Baring of teeth

Deeper growl / Snarl

Hackles up

Threat aversion

FFF

Appeasement

Focused assessment

Hard stare

Facial tension

Closed mouth

Low level growl

Sympathetic activation

Panting

Pupil dilation

Sweaty paws

Trembling / Shaking

Whale eye

Physiological preparation

Motivational conflict management

Choosing own strategy

Increasing agency

Agonistic strategy

fear

Unexpected event

Startle inc yelp

Behavioural inhibition

Orientation



Case study:
Jeremy D

The
Anxious
Romanian
Rescue
Dog



Case Study: Jeremy D



8mo Romanian rescue (crossbreed) MN 9.0kg

Presenting problem and related history:

- Reactive to other dogs (barks, whines and lunges on seeing other dogs at any distance)
- Vet described him as a 'stressed and anxious dog'
- Has good relationship with other family dog (Presley 2y Chipoo) and previously interacted very well with other dogs when off-lead in a secure field
- Previously sought behaviour advice and was told dog was over-aroused, O's felt previous advice centred on avoidance and not addressing issue
 - Never allowed off lead because of risk
- Recommended Nutracalm and Diazepam (as and when needed) - not on anything currently
- No significant medical issues

nutracalm



Assessment: Jeremy D

History

- Whining, barking and lunging in the context of seeing other dogs at any distance on walks since being in owner possession
- Has formed a good relationship with the other family dog
- On the few occasions he has been off-lead and free to interact, has engaged in reciprocal sniffing and play without exhibiting any aggressive behaviours or attempts to avoid the situation
- On-lead or when there are barriers to a free, natural interaction Jeremy exhibits the unwanted barking immediately and at a high intensity, pulling towards the other dog strongly and becoming very difficult to distract or interrupt

Temperament

- Normal impulsivity, negative activation & positive activation
 - High on excitement dimension of PA
- High on Frustration and all factors except the one related to focused attention
- **Risk assessment:** low at present

Key points



Many street dogs are incorrectly assessed as fearfully anxious



Socialisation experiences set background expectations

Cautious when absence of exposure

Avoidance when bad experience

- Possibly secondary to human reaction to the dog's behaviour

Frustration when expected freedoms are limited

Management of anxiety

Common measures

Medical	
Stressors	
HAB	
Control	
Cognition	

Management of Fear & Fear-Related Anxiety

Manage the strong risk-avoidance bias

Recalibrate fear threshold

- Establish nature of trigger stimuli

Habituation exposure – need the animal to face its fears

- Desensitisation
- Possibly operant counterconditioning if required to allow exposure

Build coping skills

Specific coping skills

- Respondent counterconditioning potentially allows greater choice
- Operant counterconditioning potentially allows owner greater control / ability to observe as more controlled situation

Management of Frustration & Frustration-Related Anxiety

Establish rules concerning what to do when autonomy is limited

Initially on cue
Then introduce accepted limits to autonomy
Shift so environmental cues control the behaviour

Build tolerance capacity

Establish operant response with reliable hold
Use coping response across an established gradient



Case study:
Jeremy D

The
Anxious
Romanian
Rescue
Dog



Management: Jeremy D

Prognosis: good

Advice:

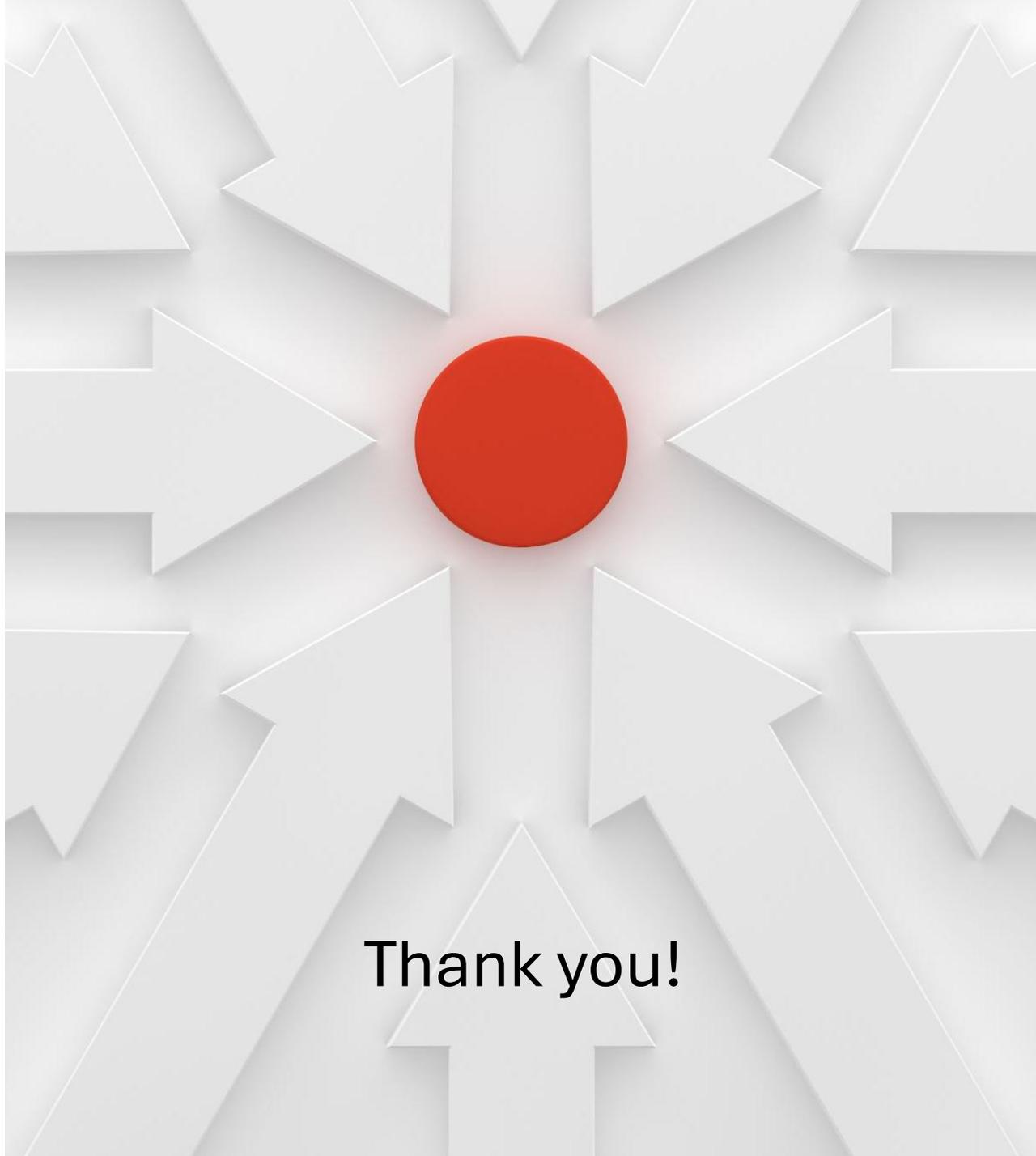
- Dealing with dogs – short term minimize time barking & avoid inadvertent reinforcement
 - If started barking
 - Stay calm & make the decision for him to move away, don't try to train at this time
 - Once away, have some fun
 - If barking and cannot move away, use your own body to block Jeremy
 - If not barking but seems unsure, and subject is not approaching
 - Sensitive carer routine to be a secure base
- Dealing with dogs - longer term introduce “go say ‘Hi’” cue for familiar dogs
- Reward what you want
- “Drunk” walking regime and teach “check in’s”
- Give freedom to compensate for restriction

Concluding comments: A psychobiological re-appraisal of anxiety

- Anxiety is a heterogeneous state that often features frustration
- Examination of contingencies and sequencing in relation to:
 - Aversives (risks of physical harm)
 - Loss or reduced rewards (threats to resources)
 - Motivational conflict

should reveal specific targets and routes for intervention

- Intervention structure should be based on a sound understanding of related psychobiology to maximise success



Thank you!