



1



2

## A question for you!

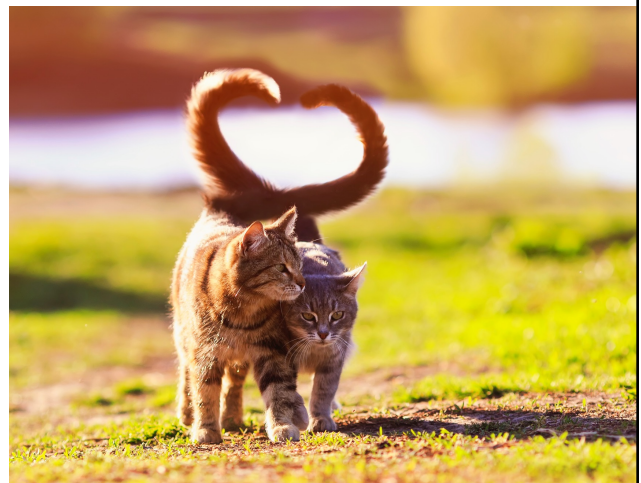


- How many cats do you see in practice?
  1. What's a cat?
  2. I see some but see dogs a lot more
  3. About 25% of my case load is cats
  4. About 50% of my case load is cats
  5. Cats rule and I focus on them 100%!

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## Topics for Today

- Feline perception
- Sociality and communication
- Social development
- Intercat aggression
  - ▣ Diagnoses
  - ▣ Treatment



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## The Umwelt of the CAT



5

## Cats are predators and prey

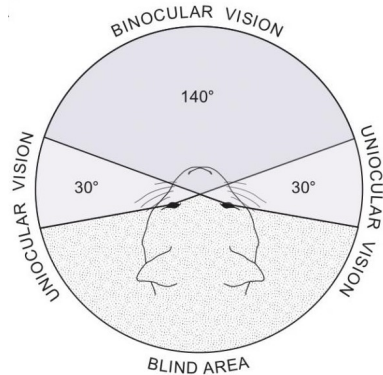
- *Felis sylvestris*
- Small, solitary cat
- Maintain many of their ancestral behaviours
- Unique behavioural needs



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## Vision

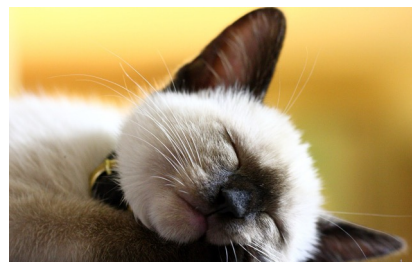
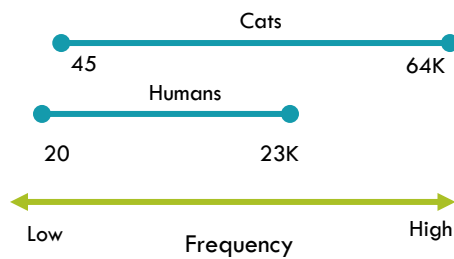
- High proportion of rods (low light) vs cones (color)
  - ▣ Color vision similar to colorblind person
  - ▣ Great low-light vision!
    - Rods
    - Tapetum
- Field of view 200 degrees
- Nearsighted



<https://www.dvm360.com/view/vision-in-dogs-and-cats>

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## Hearing



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## Olfaction

- Very sensitive!
- 200 million odor receptors
- Humans: 5 million



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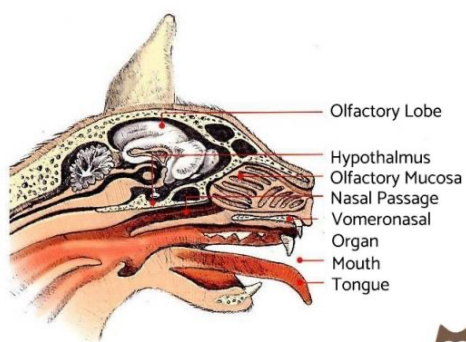
## Olfaction

- Pheromones
  - Species-specific communication molecules
  - Inhaled
  - Vomeronasal organ



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## Flehman / Gape



Animalwisdom.com



Catster.com

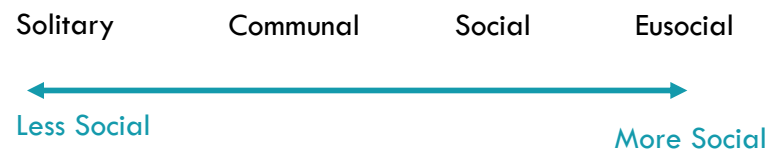
13

## Feline Sociality



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## Types of sociality



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## Social Behavior

- Cats are facultatively social
  - ▣ Solitary → colonies
  - ▣ Solitary hunters
- Clump/spread of resources often guide degree of social interactions
- Home ranges
  - ▣ Overlapping
  - ▣ Varied information about size
    - Males > Females
    - Large
    - Tom's home range encompassing queen's

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## Social Development

- Start playing with littermates at 2-3 weeks
- Socialization period: 2-7 weeks
- Females:
  - ▣ Object play
  - ▣ May be quieter players than males
- Males:
  - ▣ Social play
  - ▣ May be more “rambunctious”



McCune. The impact of paternity and early socialisation on the development of cats behaviour to people and novel objects. Applied Animal Behaviour Science (1995) 45, 109-124

17

## Cat Social Groups

- Matrilinear
  - ▣ Related females and kittens
  - ▣ Occasionally tom may be present
- This is an issue for pet (especially indoor) cats!



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## Behavior Patterns: Indoor Cats



- No significant diff seen in aggressive or affiliative behaviour between genders
- No relationship between aggression rate and weight difference between cats
- Females didn't rub other females, males were in close proximity to other males
- Aggression negatively associated with length of time in the home

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## Behavior Patterns: Indoor Cats



- 14 unrelated, sterilized cats in single home
- Overlapping home ranges
  - ▣ Males' slightly larger than females'
- Predictably places to be found
  - ▣ Unique individual spot
  - ▣ Shared spot
    - "Timeshared"

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## Social Communication



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## Scratching

- Normal behaviour
  - ▣ Nail maintenance
  - ▣ Stretching
  - ▣ Visual signal
  - ▣ Pheromone signal



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## Bunting/Face Rubbing



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## Urine Marking

- Back up to vertical object, spray urine, often tip of tail shivers
- Often small amount but can be large



Comfortzone.com

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## Body Language



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## Body Language

### Body Language of Feline Anxiety



Slight crouching



Major crouching

#### More Subtle Signs of Fear & Anxiety



Dilated Eyes

Ears Turned Back,  
Furrowed BrowStaring,  
Focused on ObjectHiding,  
Looks Half AsleepLaying on Side,  
Tail FlickingHair Raised, Staring,  
Ears Turned BackWalking with Flat Back,  
Tail Down, Head Down

Ready to Jump Off Perch

Suddenly Grooming,  
Excessive Grooming

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## Vocalization

- Purr
- Meow
- Hiss
- Growl
- Yowl



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## Cat-Human Sociality



Physiology & Behavior  
Volume 55, Issue 6, June 1994, Pages 1119-1124



Article

Friendliness to humans and defensive aggression in cats: The influence of handling and paternity

Ilana R. Reisner <sup>a</sup>, Katherine A. Houpt, Hollis N. Erb, Fred W. Quimby

- Litter and sire influenced tractability but handling or individual caging of kittens did not
- Cortisol concentrations were not a reliable indicator of stress in juvenile cats

28

## Cat-Human Sociality

**Current Biology**

Volume 29, Issue 18, 23 September 2019, Pages R864–R865



Correspondence

Attachment bonds between domestic cats and humans

Kristyn R. Vitale , Alexandra C. Behnke, Monique A.R. Udell

- Cats appear to form distinct forms of attachment, similar to previous research findings in human children and dogs.

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## Conflict Behaviors

- Often solved by dispersal
- Not good reconciliators
- When unable or unwilling to disperse → social conflict
- Post-conflict behaviours
  - ▣ Self grooming
  - ▣ Yawning
- Milder:
  - ▣ Avoidance
  - ▣ Displacement
  - ▣ Body language signs of anxiety, mild arousal
- Stronger
  - ▣ Freezing, staring
  - ▣ Vocalizing
  - ▣ Body language signs of fear, strong arousal,
- Even Stronger
  - ▣ Fighting
  - ▣ Injuries

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## A question for you!



- What behavioural sign may indicate an interaction is not play
  1. Allogrooming
  2. Hissing
  3. Biting
  4. Batting with front paws
  5. Back-and-forth interaction style

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## Play vs fighting



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## Implications for Households

- Primary way to diffuse social tension is dispersal.
  - ▣ Limited space to do this
  - ▣ Limited, often clumped resources
- Unrelated cats



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## Intercat Tension / Aggression



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## Intercat Aggression in the Home



Applied Animal Behaviour Science  
Volume 55, Issues 1–2, December 1997, Pages 153–162



Intercat aggression: a retrospective study examining types of aggression, sexes of fighting pairs, and effectiveness of treatment

Ellen M. Lindell <sup>✉</sup>, Hollis N. Erb <sup>✉</sup>, Katherine A. Houpt <sup>✉</sup>

- 48 cases ICA (retrospective)
- Males initiated more aggressive bouts than females
- Targets: Male = Female

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## Intercat Aggression in the Home



Applied Animal Behaviour Science  
Volume 90, Issues 3–4, March 2005, Pages 325–336



Intercat aggression in households following the introduction of a new cat

E. Levine <sup>✉</sup>, P. Perry, J. Scarlett, K.A. Houpt

- Survey
- Introductions:
  - 50% reported fighting between cats upon introduction
  - 50% immediately integrated the cats
- 35% reported persistent fighting (2-12 months after introduction)
- **Initial fighting strongly associated with persistent fighting** - introduced cat is most likely to try and play and resident cat is most likely to hiss, hide, flee and stare
- Method of introduction, age, sex, number of cats or size of house NOT associated with persistent fighting

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## Intercat Aggression

- Guidelines 2024
  - ▣ Very comprehensive
  - ▣ Diagnoses
  - ▣ Treatment options



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## Clinical Signs

- |                       |                 |
|-----------------------|-----------------|
| □ Agonistic posturing | □ House soiling |
| □ Avoidance of cat    | □ Urine marking |
| □ Vocalization        | □ Hiding        |
| □ Fighting            | □ Weight loss   |
| □ Injury              | □ FIC / FLUTD   |

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## Medical Rule-Outs

- Pain
  - ▣ Orthopedic / DJD
  - ▣ Neurologic
  - ▣ Gastrointestinal
  - ▣ Urinary
- Physiologic
- Endocrine
- Inflammatory
- Infectious disease
- Neoplasia
- Central nervous system disease

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## Behavioral Diagnoses

- Top Causes
  - ▣ Territorial
  - ▣ Fear-based
  - ▣ Redirected aggression secondary to one of these



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## Territorial Aggression

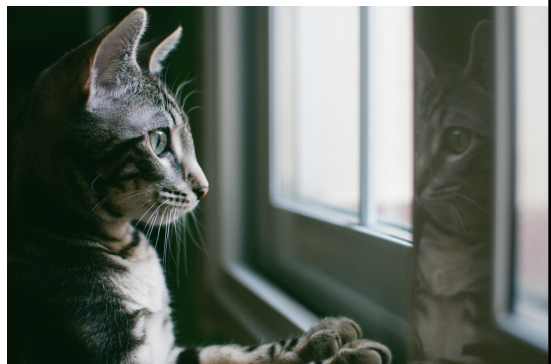
- Usually another cat
  - Can be towards visitors
- Occurring at boundary
- Offensive, inner ears pointed outward, tail base raised
- Through windows
- Urine marking



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## Redirected Aggression

- Cat attacks nearby cat after being stimulated by another stimulus
  - Other cat outside window
  - Noise triggers
- Can lead to long-term behavioural change between cats



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## Fear-Based Aggression

- Any age, any breed
- Showing signs of fear or anxiety before or during incident
  - ▣ Ears back
  - ▣ Pupils dilated
  - ▣ Leaning / moving away
  - ▣ “Halloween cat” posture
- May be due to:
  - ▣ Presence of other cat
  - ▣ Play by other cat
  - ▣ Actual attacks from another cat



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## A Question for you!



- A client reports that their cat was growling at a cat outside the window. When their other cat approached, he attacked her. This aggression could be best classified as:
  1. Possessive aggression
  2. Status-related aggression
  3. Play aggression
  4. Redirected aggression

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## A Question for you!



- A client reports that their cat was growling at a cat outside the window. When their other cat approached, he attacked her. This aggression could be best classified as:
  1. Possessive aggression
  2. Status-related aggression
  3. Play aggression
  4. Redirected aggression

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## Treatment

- Treat underlying medical conditions
- Environmental management
- Environmental enrichment
- Medications if needed
- Behavior modification
  - ▣ Teach specific behaviours
  - ▣ Desensitization and counter-conditioning



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## Environmental Management



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## Environmental Management

- Avoid or prevent situations that trigger aggressive behaviour.
  - ▣ Prevent rehearsal
  - ▣ Prevent physical and emotional injury to target cat

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## Environmental Management

- Full separation of household cats?
- Preventing visual access to outdoor cats
  - ▣ Advise of possible treatment failure if indoor/outdoor
- Minimizing exposure to other stressors
  - ▣ Dogs
  - ▣ People
  - ▣ Sounds
  - ▣ Etc.

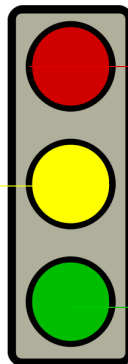


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## Environmental Management

Treatment Indicated. May need separation

- Infrequent/lack of affiliative behaviors
- Avoidance/displacement without overt distress
- Infrequent negative interactions



Treatment Indicated. Separation beneficial

- Overt conflict/aggressive behaviors
- Shows fear, arousal, anxiety in the presence of the other cat
- Physical contact/injury common
- Welfare concern!

Treatment not indicated. Do not need separation

- Shared resting spots, allogrooming/rubbing
- Frequent affiliative interactions
- Minimal conflict interactions, high frequency of affiliative body language signs

Pachel, C. L. (2014). Intercat Aggression: Restoring Harmony in the Home. *Veterinary Clinics of North America: Small Animal Practice*, 44(3), 565–579.

50



## Environmental Enrichment



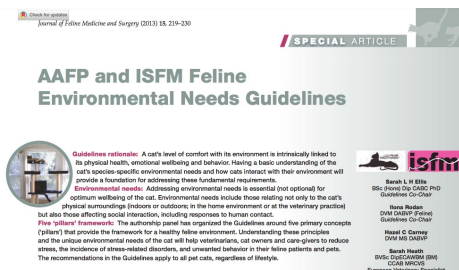
51

## What Do Cats Need?

### □ Five Pillars of a Healthy Cat Environment (AAFP)

#### □ Provide indoor cats with:

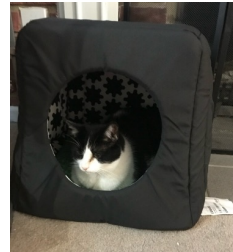
1. Safe places to go
2. Multiple and separated key resources
3. Opportunities for play and predatory behaviour
4. Positive, consistent and predictable social interactions
5. An environment that respects their sense of smell



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## Safe Places – Hiding

- Carrier
- Box
- Paper Bag
- Baskets
- Tunnels
- DIY Cat tent (t-shirt and box)



Photos courtesy of Tabitha Kucera

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## Safe Places – Hiding



- Cat Trees
- Door/wall shelves
- Window perches
- Ladders and other climbing areas

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## Play/Predatory Behavior

- Structured playtime
- Encourage parallel play if appropriate
- Food toys/hides
- <http://foodpuzzlesforcats.com/>



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## Multiple and Separated Key Resources

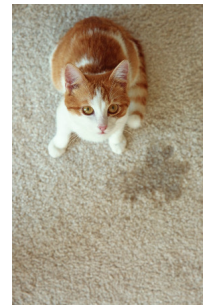
- This allows cats to disperse!
  - ▣ Litterboxes
    - N+1 rule
  - ▣ Food and water
  - ▣ Perching locations
  - ▣ Resting locations
  - ▣ Play areas and toys
  - ▣ Scratching locations



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## Inappropriate Toileting / Marking

- Social anxiety
- Lack of access
- Negative associations with litter box

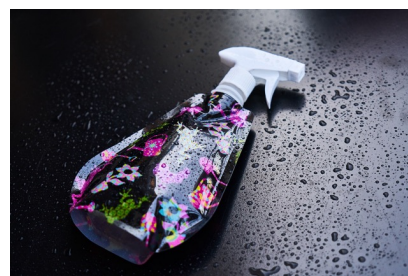


Mycarpetpal.com

57

## Consistent Interactions

- Avoid punishment
  - ▣ Doesn't make them feel safe
  - ▣ Increase stress
  - ▣ Relationship is more unpredictable
  - ▣ Increases negative association with client and other cat
  - ▣ May continue problem behaviour when client is not around
- Respect whether they want to interact



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## Consistent Interactions

- Avoid punishment
  - Doesn't make them feel safe
  - Increase stress
  - Relationship is more unpredictable
  - Increases negative association with client and other cat
  - May continue problem behaviour when client is not around
- Respect whether they want to interact



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## Consistent Interactions

- Belled collar on aggressor
- Harness



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## Sense of Smell - Pheromones

- Avoid strong smells
- Synthetic appeasement pheromone
  - ▣ Queens produce when nursing kittens



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## Psychopharmacology



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## Considerations for Usage

- Concurrent medications / medical conditions
- Stressors are unavoidable
- Treatment will cause stress
- Elevated baseline anxiety or arousal
- Disproportionate response
- Euthanasia being considered



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## Considerations for Usage

- Quick-acting vs mainstay medications
  - Do you need rapid relief?
  - GABA, serotonin
- Mainstay medications
  - 6-8 weeks to build up
  - Stabilizes mood
  - Serotonin, norepinephrine



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## Psychopharmacology

- Selective Serotonin Reuptake Inhibitors (SSRIs)
  - ▣ Fluoxetine (0.5-1.5mg/kg PO SID)
  - ▣ Paroxetine (0.5-1.5mg/kg PO SID)
  - ▣ Sertraline (0.5-1mg/kg PO SID)
- Tricyclic Antidepressants (TCAs)
  - ▣ Clomipramine (0.5-1mg/kg PO SID)
- Rapid-acting Medications
  - ▣ Lorazepam (0.02mg/kg PO BID)
  - ▣ Gabapentin (50-100mg PO BID-TID)
  - ▣ Trazodone (50mg PO SID)
- Other
  - ▣ Zylkene
  - ▣ Solliquin
  - ▣ Composure Pro



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## Psychopharmacology

- Supplements
  - ▣ Zylkene
  - ▣ Composure Pro
  - ▣ Solliquin
- Diets
  - ▣ RC Calm
  - ▣ RC Urinary SO + Calm
  - ▣ Hill's CD Multistress



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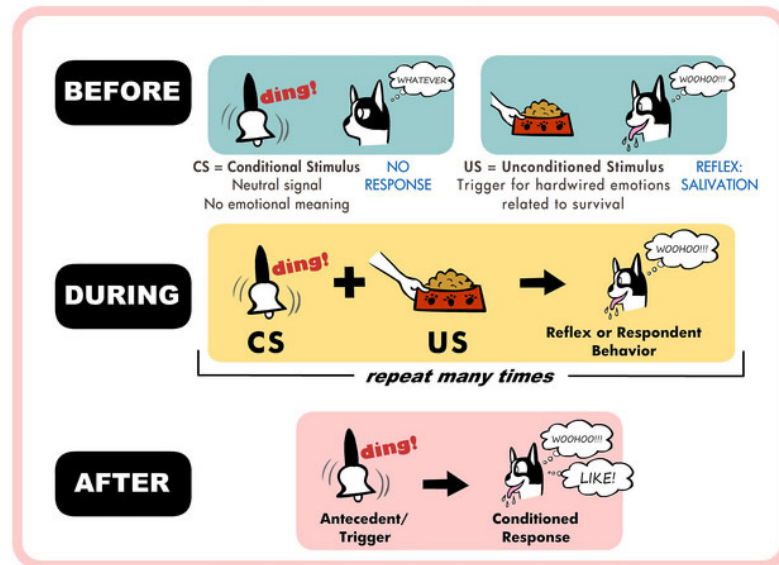


## Behavior Modification



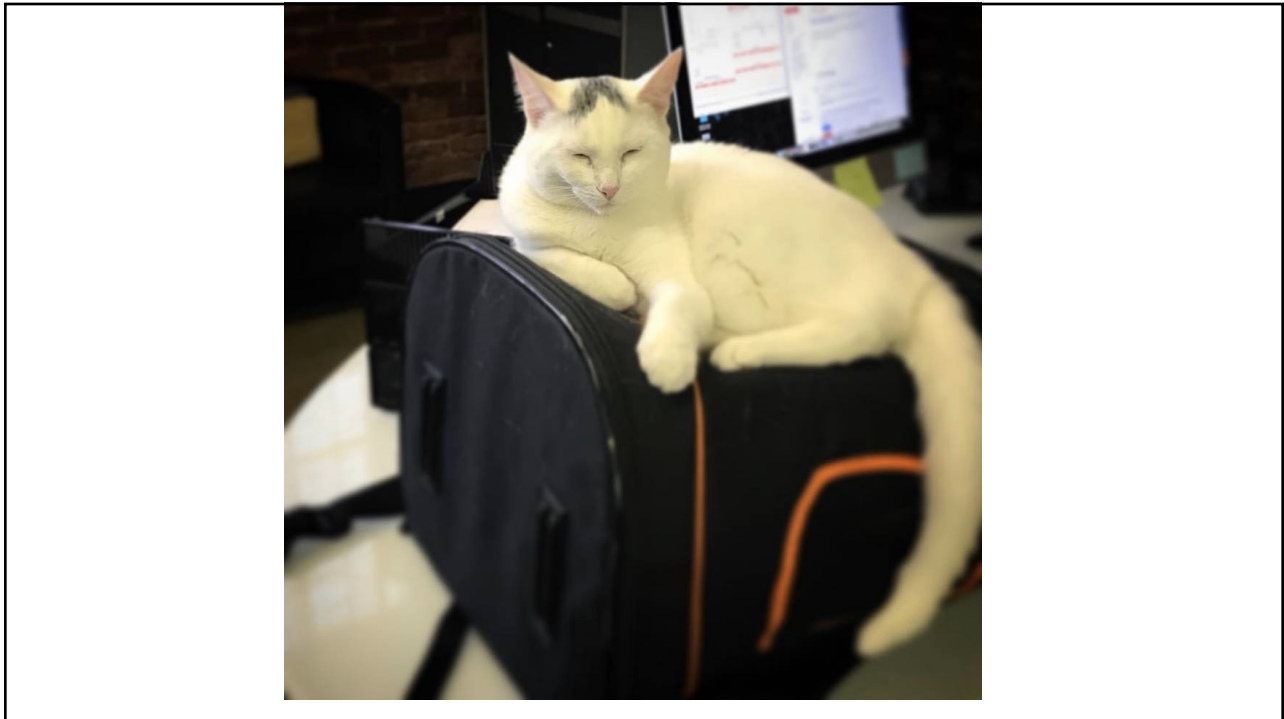
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### CLASSICAL (PAVLOVIAN) CONDITIONING



Copyright © 2013 Lili Chin doggedrawings.net/dogtraining

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## Classical Conditioning

- Carrier = Neutral stimulus
  - Vet Visit = Unconditioned stimulus
  - Fear = Unconditioned response
  - Hiding = Conditioned response
1. Carrier = No reaction
  2. Carrier + Vet Visit = Fear response
  3. Carrier = Fear → Hiding

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## Classical Conditioning

- Can condition emotional responses, not just behaviour
  - ▣ Positive
  - ▣ Negative
- Association not contingent on what the learner is doing



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## Operant conditioning

- Behavior change due to consequences of that behaviour
- Think of  $A \rightarrow B \rightarrow C!$ 
  - Antecedent
  - Behavior
  - Consequence



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## Antecedents

- Visual/Verbal Cue
- Environmental cues
- Another behaviour
- Social interaction



Wellandgood.com

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## Behavior

- Observable
- Measurable



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## Consequences

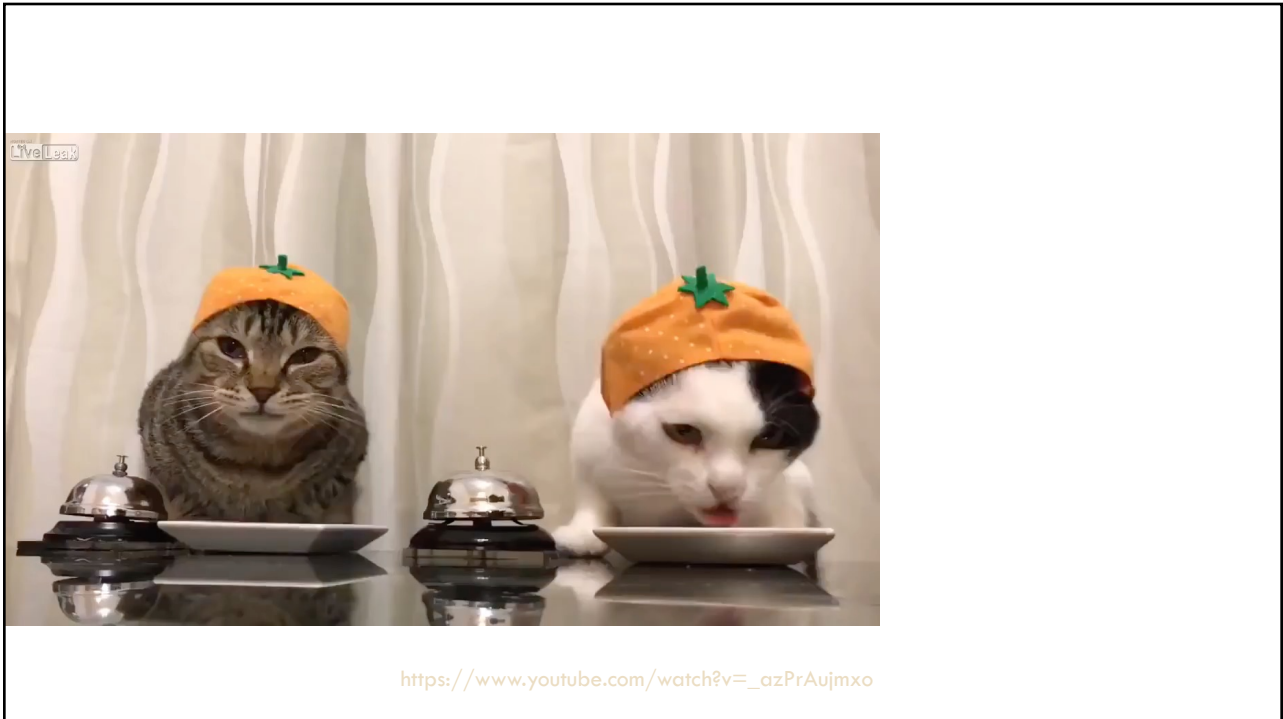
- Consequences categories
  - ▣ Is the consequence...
    - Applied? **Positive**
    - Removed? **Negative**

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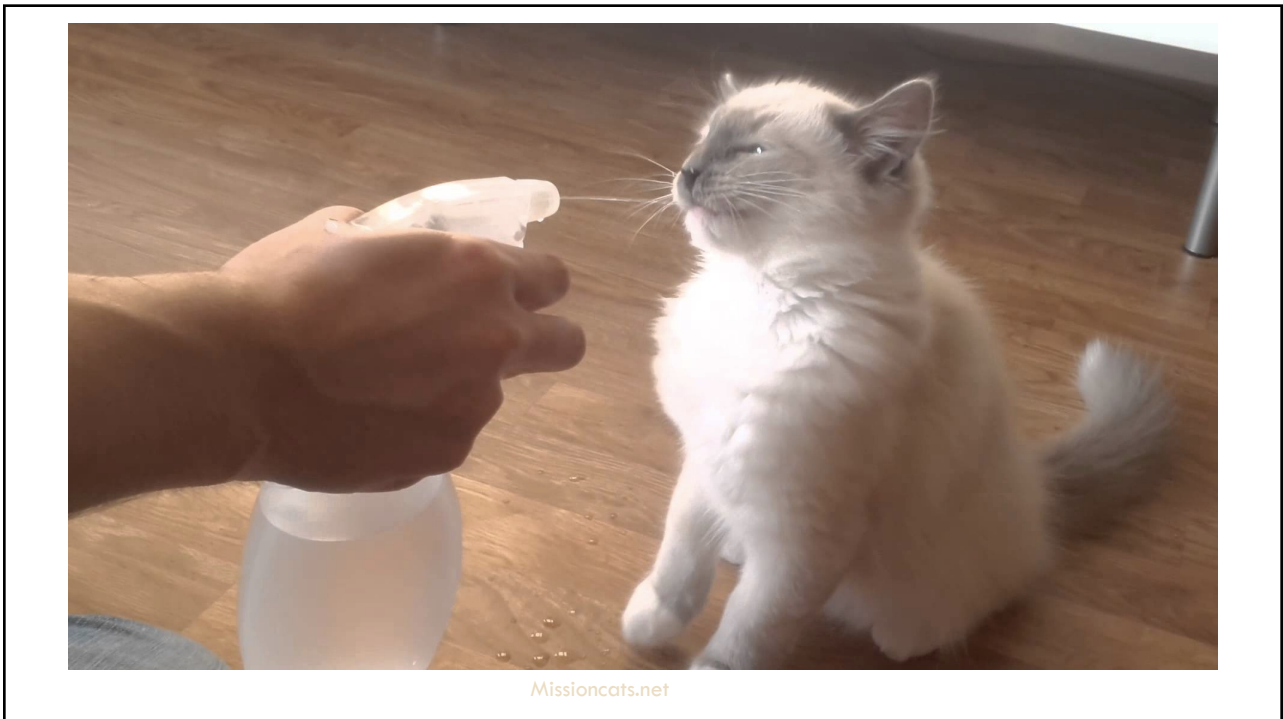
## Operant Conditioning

- Consequences categories
  - ▣ Will the consequence:
    - ↑ future behaviour? **Reinforcement**
    - ↓ future behaviour? **Punishment**
  - ▣ Does the consequence involve something being...
    - Applied? **Positive**
    - Removed? **Negative**

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## A Note on Consequences

- Salient to learner
  - Has to care at that moment!
  - Varies by species
  - Varies by individual
- Appropriateness
- Timing
- They are always learning, even if you are not teaching



<https://www.youtube.com/watch?v=kG3acfOAEbc>

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## Characteristics of Effective Punishment

- Immediate
- Consistent
- Appropriate level
- Relevant to learner
- This is difficult to do for positive punishment!
- High potential for negative side effects



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## Secondary Reinforcer (marker Signal)

- Signal that is paired with a reinforcer
  - Sound – clicker, verbal
  - Visual – penlight
- Classically condition association between marker and reinforcer
- Use the marker to mark (indicate) desired behaviour – knows reward is coming!



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## Behavior Modification



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## Systemic Desensitization and counter-conditioning

- Gradual and safe exposure to a fear-provoking stimulus at levels in a way that does not produce a fear response.
- Often paired with counter-conditioning
  - Relaxation / Coping strategies / Alternate behaviours
  - Changing emotional response

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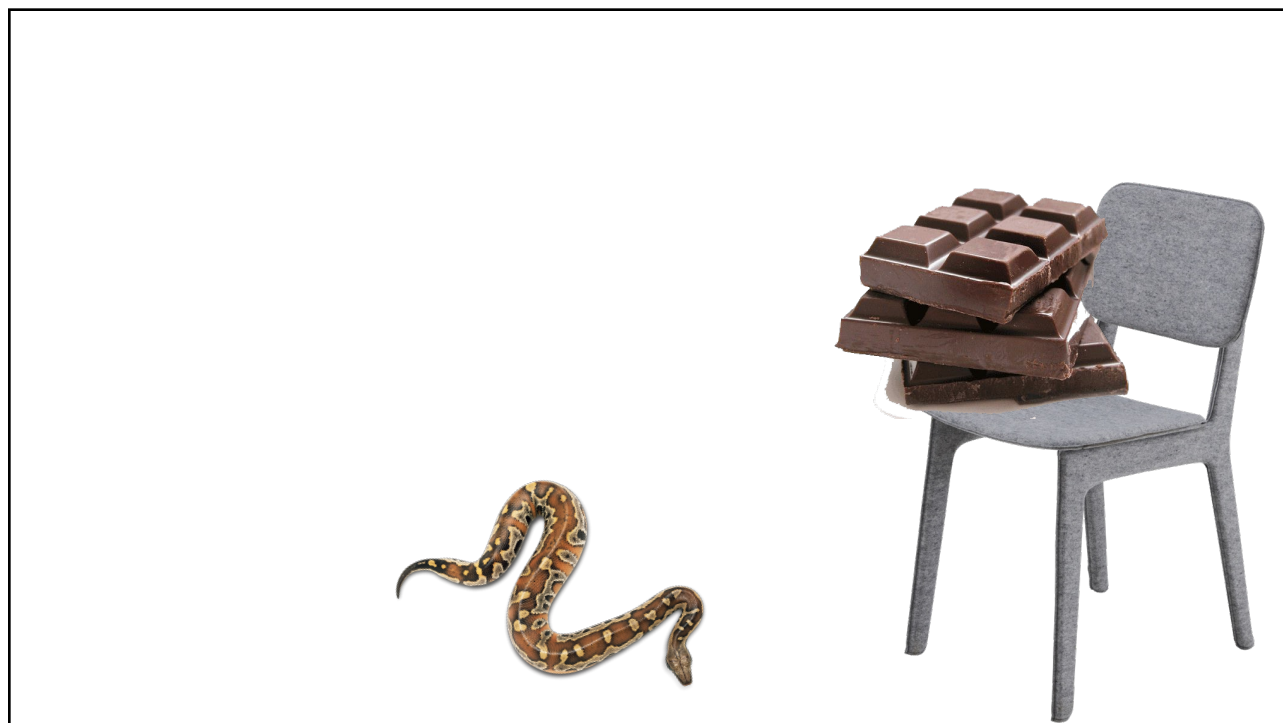
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## Systemic Desensitization and Operant Counter-Conditioning

1. Determine desensitization gradient / stimulus hierarchy
2. Teach desired response
3. Teach desired response along gradient



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## Foundation Behaviors

□ Come



[www.adventurecats.org](http://www.adventurecats.org)

□ Sit



<https://www.youtube.com/watch?v=IOZOxGVd1vo>

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## Foundation Behaviors

### □ Target



<https://www.youtube.com/watch?v=zf13IGtazGI>

### □ Station



<http://www.gooddogspot.net>

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## Flooding

- Repeated exposure to a fear-provoking stimulus (at fear-provoking levels) results in eventual decreased response.
- “Get Over It” method
- Can make fear much worse



wiki:How to Hold a Cat by the Scruff

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## Setting up a Behavior Modification Program



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What does the cat like?  
How will it affect process?

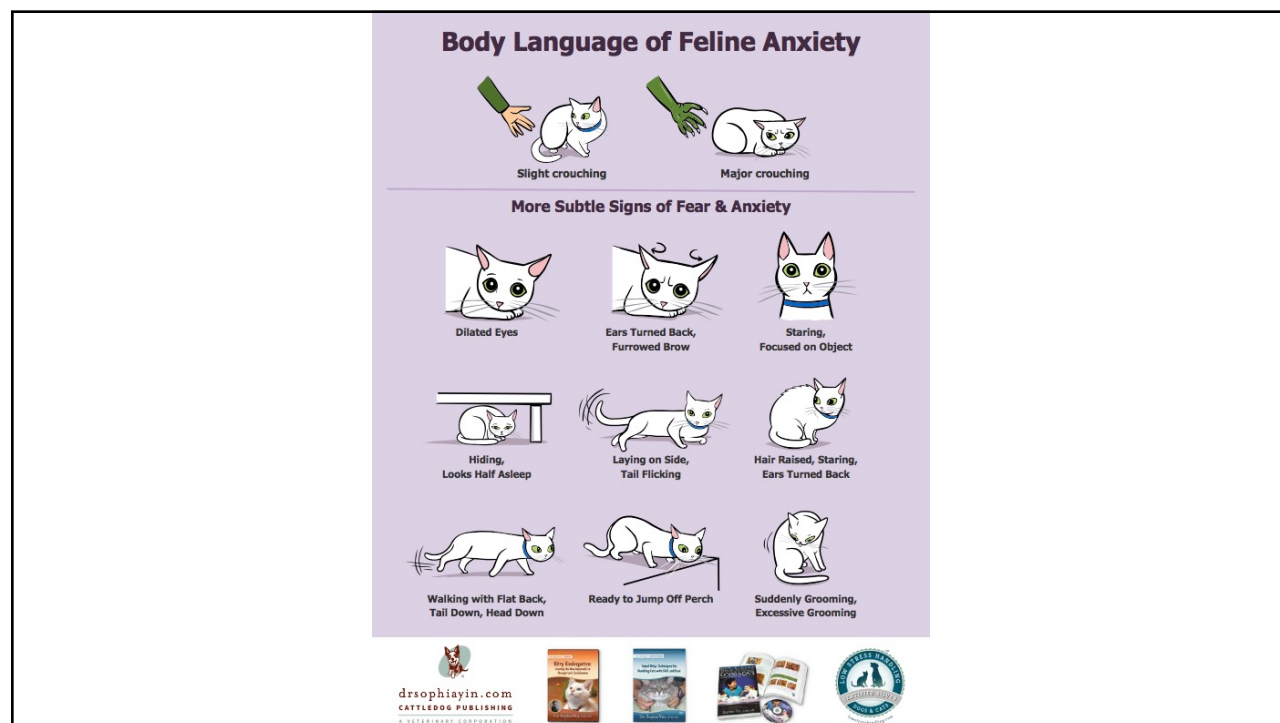


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## Setting up a desensitization program

- Specific behaviour desired?
- What is your starting point?
- What might your gradient look like?
- What behavioural signs will you look for to indicate that it is going well / poorly?

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## A Question for you!



- You are coaching a client on a desensitization and counter-conditioning program to reintroduce their two cats who have been fighting. During the session the cats are 10 feet apart.
- Observations:
  - ▣ Cat A eating treats while intermittently watching Cat B. Cat A's in a relaxed crouched position with ears forward and tail extended behind him.
  - ▣ Cat B is watching Cat A with tightly crouched body language, tail curled around themselves, ears forward, not eating treats

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## A Question for you!



- Based on the previous description, what would be your advise to the client?
  1. Both cats are comfortable, bring Cat A closer to Cat B
  2. Both cats are comfortable, stay at this distance.
  3. Cat A is likely not comfortable, increase the distance
  4. Cat B is likely not comfortable, increase the distance

111

## A Question for you!



□ Based on the previous description, what would be your advise to the client?

1. Both cats are comfortable, bring Cat A closer to Cat B
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3. Cat A is likely not comfortable, increase the distance
4. Cat B is likely not comfortable, increase the distance

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## Case Example



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## Fritz and Frank

- Signalment: 2yo MN DSHs
- Not littermates
- With client since 10w
- Didn't fight but little affiliative behaviour
- 1 yo MN DSH – very bonded with Frank



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## Fritz and Frank

- Fight – redirected aggression of Fritz onto Frank secondary to territorial aggression directed at an outside cat
- Fritz → threats (hissing, growling, chasing, fighting) toward Frank.
- Frank would run and hide (Fear of Fritz)
- No other problem behaviour
- PE and labwork unremarkable



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## Fritz and Frank

- Plan:
  - ▣ Fluoxetine (Fritz), Zylkene (Frank)
  - ▣ Complete separation
  - ▣ Environmental enrichment
- Desensitization and counter-conditioning reintroduction program



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## What about feeding next to each other?

- Limited resource
- Forced interactions
- Flooding



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## Fritz and Frank

### □ Desensitization Gradient

- ▣ Scent swapping
  - Face-rubbed towel
  - "Timeshare" the house
- ▣ Gradual exposure using a closed door
- ▣ Gradual visual exposure



- Favorite canned food
  - ▣ High-value
  - ▣ Long-lasting
- Gradually decrease the distance
- Maintain calm body language
  - ▣ No specific behaviour was desired
- Problem: Single person, two cats!

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## Distance-Maintaining strategies



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## Distance-maintaining Strategies

- Positive exposure and comfort to the method before using it during behaviour modification
- Remote viewing



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## Take home points

- Early intervention is ideal
- Use the positive, avoid the punishment
- Behavior Treatment:
  - ▣ Rule out physical problems
  - ▣ Environmental management
  - ▣ Environmental enrichment
  - ▣ Desensitization / coping skills
  - ▣ Set up training environment for success
  - ▣ Use medications when needed

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## Questions?

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Portland, OR

[info@synergybehavior.com](mailto:info@synergybehavior.com)  
503-336-1202



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