How Dogs Learn

TRISH KING, CPDT-KA, CDBC
ACADEMY OF DOG BEHAVIOR

Dogs

- Come loaded with the potential to learn, just as people do
- They have many instinctive behaviors, which will emerge as their internal clocks mandate
  - These behaviors are not necessarily subject to our preferences
- Learning happens, whether we are teaching them or not
  - Their brains are also malleable, so they can learn behaviors which will benefit them and lead to a longer life
- ALL ORGANISMS HAVE A TENDENCY TO SEEK AND RETURN TO THEIR COMFORT ZONES, which often means what we teach will disappear unless regularly reinforced

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Humans and Animals – Focus

People have an executive brain, which tells us what to focus on

We must use this – it's not an option
- When we see the top of a foggy mountain, we fill in the rest of the mountain
- When we see a partial anything, we fill in the rest

Animals see pretty much everything, all the time
- They see the top of the mountain only
- They believe what they see

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Inattentional Blindness
Selective Reality

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Fully half of the people involved in this experiment did not see the gorilla, because they were focused on the ball
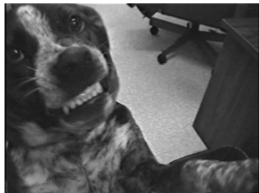
An animal would always see it, whether she wanted to or not

This inattentional blindness affects learning for us, and colors how we think dogs learn
◦ Dogs are place learners
◦ New places and environments create real obstructions to learning

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Stages of learning

Acquisition - Dog is first learning something

Maintenance - The behavior has been learned, and the expectation is that it will be performed

Definitions

Reflex and Cognition

- **Reflex**
  - **Involuntary action or response, such as a sneeze, blink, or hiccup**
  - **Produced as an automatic response or reaction: I pull, you pull back**
  - **Reflexive actions take place without thinking**
- **Cognition – Voluntary action or response to stimuli**
  - **Cognitive actions can only take place one at a time!**

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Types of learning

Social Learning (Facilitation/Observational)

Non-Associative Learning (Events are not linked)

Classical conditioning (events are linked with no overt action on the part of the animal)

Operant conditioning (the behavior produces the event)

(Natural learning)

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Operant Conditioning

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Social learning - Allomimetic

Observation, Imitation and Facilitation

- Observation and Imitation
  - The dog does something after watching someone else do it – ie hunting (or opening dog doors)
- Facilitation - The dog does something because everyone else is doing it.
  - Facilitation encompasses what we consider "pack" behavior - dogs "packing up" to attack another dog
  - Facilitation allows a dog to do something he might not ordinarily do

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Natural learning overrides human teaching

If you praise or otherwise reinforce social learning, it becomes stronger
◦ Aspen chased buzzards
  ◦ Heather learned to follow
    ◦ Now Flaca is chasing buzzards

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Major issues anywhere there are two or more dogs

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"**Do As I Do**" is an observational training method developed by Claudia Fugazza

Aufräumen

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Non-Associative Learning

Single event learning - an event occurring in isolation causes the dog to believe it's important.

- An example is Sudden Environmental Change (SEC)
  - Dog gets bitten by bee on trail – now afraid of trail

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A non-associative learner…

Sees coincidence as correlation
- Predator sees prey on trail; searches that spot **every day thereafter**
  - The fact that the prey was seen there once was a coincidence not a correlation – but that is not always true (and occasionally the animal is right)

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Habituation - events of no significance that occur repeatedly induce habituation

If a dog lives by a freeway, he will quickly get used to cars going by. His response will go from 10 to 8 to 6 to 4 to 0, eventually having no effect.

- **Habituation is subject to spontaneous recovery.**
  - **If the sound of the freeway changed, the reaction of the dog would go back to level 10, and the process would have to start all over again.**

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Sensitization can override Habituation

Drawback to habituation Sometimes instead of habituation, the dog "sensitizes."

- **If the dog moved close to a firing range, gunshots would occur throughout the day. Perhaps the dog would habituate, but he may also become ultra-sensitive and *reactive* to the sound.**

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Sensitization examples

Thunder phobia - comes on over time, so that older dogs are much more likely to be sensitive to the sound of thunder than are younger dogs.

• Some dogs sensitize to the clicker, unless you're careful

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The possibility of sensitization should be kept in mind, if you are training or consulting with clients (or your own dog!)

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Classical Conditioning

○ **The dog learns that certain things occur together - an association is formed without the dog doing anything to make the association occur.**
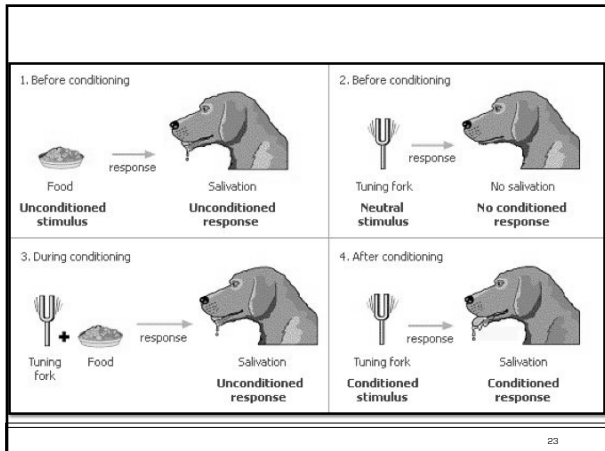
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Classical (or Respondent) Conditioning

The original relationship (meat powder - drool) was an unconditioned reflex; the new one (harness – drool) is a *conditioned* reflex.

- Meat powder = salivation (unconditioned response)
- Harness = salivation (conditioned response)

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1. Before conditioning

Food → response → Salivation

Unconditioned stimulus → **Unconditioned response**

2. Before conditioning

Tuning fork → response → No salivation

Neutral stimulus → **No conditioned response**

3. During conditioning

Tuning fork + Food → response → Salivation

Unconditioned response

4. After conditioning

Tuning fork → response → Salivation

Conditioned stimulus → **Conditioned response**

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Classical Conditioning

Emotional states can be changed through the use of Classical Conditioning. (John Watson's experiment in the 1920'a

- Child is shown a neutral stimulus (white rat), which is interesting. Each subsequent exposure to the rat is accompanied by a nasty noise. Before long, the child has a fearful (conditioned response) whenever he sees the rat.
- Think of examples where you have conditioned an emotional response in your dog.

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Systematic Desensitization and Counter Conditioning

Something the dog has a strong negative response to is presented at a level the animal can handle, at the same time that a pleasant stimulus is given to the animal.

A very simple procedure, very difficult to implement in the real world

Classical Conditioning (SD & CC) for aggression

1. A reactive dog sits beside his owner
2. Another dog is brought in at a tolerable level (the subject dog remains relaxed)
3. Immediately after the second dog is brought in, the subject dog is fed
   ◦ The subject dog does NOT have to do anything to be fed

(In reality, things are not so simple)

Sometimes starting to feed the subject dog before the second dog is brought in actually helps

- It is generally a good idea to give time outs – in order allow time for latent learning
  - #2 dog is brought in;
  - #1 dog relaxes#2 dog comes closer;
  - #1 dog tenses#2 dog moves back; #1 dog relaxes

Dogs are always learning…whether we are teaching them or not

Operant Conditioning

The dog's behavior operates on - or has an effect on - the dog's world.

- **Operant Conditioning follows a specific sequence**
  - **Antecedent ➔ Behavior ➔ Consequence**
  - **BF Skinner did vast amounts of research on operant conditioning, and his work remains pivotal to training.**

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ABC's….A is for Antecedent

Antecedents are the variables that may influence behavior. This includes…
- **Stimuli… various stimuli in the environment**
- **Previous conditioning history**
- **Establishing factors, such as how hungry the animal is, how hot it is, illness, danger**

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ABC's – B is for Behavior

Behavior is anything the animal does

For training purposes and for behavior modification, we break complex behavior into precise, desired responses.

ABC's – C is for Consequence

Each behavior has a consequence

- **Behaviors either strengthen or weaken (they *never* stay the same)**

Reinforcement

Reinforcement, which increases the behavior, whether it's a behavior you want or a behavior you don't want. (what are some reinforcements for you?

Punishment

◦ **Punishment weakens the behavior it follows and, if strong enough, perhaps suppresses it. (What are things that weaken your behavior?)**

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Extinction

◦ **Extinction is the gradual weakening of a previously reinforced response when it is no longer reinforced. It is the surest, most humane way to eliminate a behavior.** *Behavior disappears.*
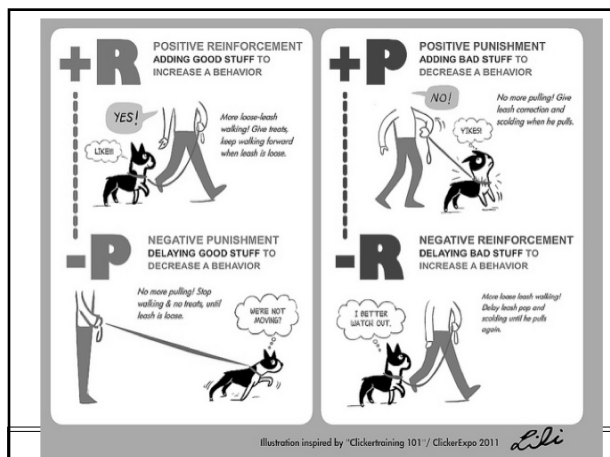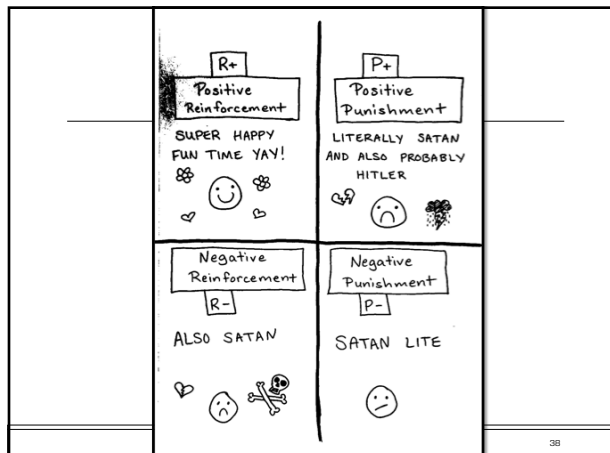
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The Power of Consequences

All behavior is driven by its consequences

• **Sometimes by the anticipation of consequencess....**

"The bone is not the reward—digging for the bone is the reward."

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Operant Conditioning

Positive Reinforcement ➜➜➜ **Behavior increases**

Negative Reinforcement ➜➜➜ **Behavior increases**

Positive Punishment ➜➜➜ **Behavior decreases**

Negative Punishment ➜➜➜ **Behavior decreases**

Positive Reinforcement: (pleasant)

If your dog behaves in a certain way and you PRESENT (add) a pleasant thing, you make it MORE likely the dog will behave that way again.

- **By giving the dog a treat when he sits, you increase the likelihood that he'll sit the next time you cue him**

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Positive Punishment (unpleasant)

If you PRESENT (add) an unpleasant thing, you make it LESS likely the dog will behave that way again.

If you jerk on a leash when your dog pulls, you decrease the likelihood that he will do it again

INTIMIDATION
NO ONE CAN MAKE YOU FEEL INFERIOR WITHOUT YOUR CONSENT, BUT YOU'D BE A FOOL TO WITHHOLD THAT FROM YOUR SUPERIORS.
www.despair.com

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Negative Reinforcement (pleasant)

If you REMOVE (subtract) an unpleasant thing, you make it more likely that your dog will repeat the behavior. Negative reinforcers strengthen responses that avoid or end an aversive.

If you stop pulling on the leash (releasing pressure) you increase the likelihood that he will not pull again

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- Handler jerks on the leash, the dog receives **Positive Punishment**
- Handler releases pressure on the leash, the dog receives **Negative Reinforcement**

- Dog pulls on the leash, the human receives **Positive Punishment**
- Dog releases pressure on the leash, the human receives **Negative Reinforcement**

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Negative Punishment (unpleasant)

If you REMOVE (subtract) a pleasant thing, you make it LESS likely the dog will repeat the behavior.

> **If you ignore or remove yourself when the dog jumps up, you decrease the likelihood that he will jump again (at least theoretically)**
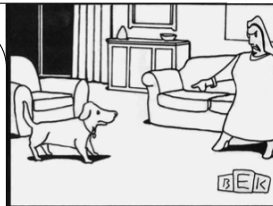
"Sit. Stay. Make up for everything that's wrong in my life."

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In Other Words

Positive Reinforcement means the dog's behavior makes a *good thing happen*.

Positive Punishment means the dog's behavior makes a *bad thing happen*.

Negative Reinforcement means the dog's behavior makes a *bad thing go away*.

Negative Punishment means the dog's behavior makes a *good thing go away*.

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Operant Conditioning

For our purposes in training, the consequence is the reward; therefore the reward must be rewarding to the dog.
- **Food is usually the reward of choice, because it is necessary for survival, and easily obtainable**
- **Play can be a valuable reward**
- **Life rewards can be excellent consequences**

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Most behavior changes are a combination of classical and operant conditioning

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Something to think about

Can emotions be operantly conditioned (trained)? Trainers warn clients not to reassure a dog who is fearful, because they will become more fearful in order to earn reinforcement (petting).

Science says NO. Emotions are involuntary, and not amenable to operant conditioning – just classical conditioning.

However, you can reinforce a behavior that is occurring when you reassure the dog

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Intrinsically rewarding and non-rewarding behaviors

- Whether you choose a food/toy or life reward depends a great deal on the behavior you are shaping.
  - For a **wait** at the door, often just going through the door is reward enough
  - Teaching a long (boring) down, might require a substantial reward
    - *Nothing will override all instincts all the time*

- Varying the reward will increase your dog's response
- Some picky dogs require a little "taste" before training - a reinforcement sample!

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Timing

Timing in the delivery of your reward is absolutely critical, at first. Each reward must come immediately after the behavior in order to be relevant to the dog.

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Conditioned reinforcement

Conditioned reinforcement is anything the dog finds pleasing that he learned to enjoy as a result of it being linked to an unconditioned reinforcement (i.e. food).

<u>Conditioned reinforcers - marker words or clickers.</u>

Conditioned reinforcement is useful for predicting the delivery of a primary reinforcer, marking a targeted behavior or bridging the time to primary reinforcement.

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Schedules of reinforcement (simplified)

Continuous - reinforcement for each behavior

Variable - reinforcement for some behaviors

Differential - reinforcement for excellent behaviors (DRE)

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More on intermittent reinforcement

Intermittent, variable or random reinforcement is VERY powerful.

After you have established the behavior (continuous reinforcement), in order to make it reliable, you should go to intermittent

The power of not knowing that makes the behavior improve.

Example - Sophie on the trail and with the Goodie Ship

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You can accomplish the same thing by only reinforcing the best behavior (Bailey's)

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Operant Conditioning

Positive Reinforcement ➜➜➜ Behavior increases

Negative Reinforcement ➜➜➜ Behavior increases

Positive Punishment ➜➜➜ Behavior decreases

Negative Punishment ➜➜➜ Behavior decreases

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Establishing a target behavior

Methods of getting to the target
◦ **Catching**
◦ **Prompting and fading**
  ◦ **Luring**
  ◦ **Modeling**
◦ **Shaping - molding a behavior in small steps**

Adding the cue
◦ **After the behavior has become somewhat reliable**

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Learning can change from minute to minute – Dogs don't read rules

There isn't a clear cut division between reflex and operant; it's a continuum.

Some responses are partially reflex, partially operant and both kinds of behavior, respondent and operant, go on simultaneously.

Instinctive drift is always waiting to occur

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Review

All behavior is driven by its consequences
◦ **Dogs do what works**
  ◦ **If jumping on the counter results in food, they will continue to jump on counter**
  ◦ **If running away results in freedom, they will continue to do that**

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Review

Desirable behaviors that are intrinsically rewarding (have good consequences) do not need a reward from us – behaviors that are inhibiting do.

• **Obedience exercises**
• **Agility**
• **Retrieving**

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Positive and Negative Punishment

Positive – something added to reduce behaviors
◦ **Striking , yelling, throwing something, pulling on a leash**

Can Work… but there are many criteria
1. **Has to be the appropriate strength (big - memorable)**
2. **Timing is critical**
3. **Come from the environment**
4. **Should happen every time the behavior occurs**

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Positive Punishment (unpleasant)

Should be cued only if appropriate

Dog cannot enjoy the reinforcement so much that he or she will repeat the misbehavior- nor identify the punishment solely with the reinforcements

After 3 to 4 attempts -give up
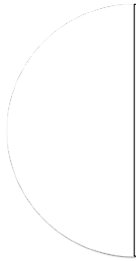
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Punishment Used Incorrectly

The punishment paradox

• **If the punishment is not seen as severe, it will backfire**

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Punishment Reinforces The Punisher

It feels good to punish – makes the punisher appear to have done *SOMETHING*

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Conditioned punishment

If you have a conditioned reinforcement, can you have a conditioned punisher? How would that work?

Questions
◦ **When would you use various kinds of training tools?**
◦ **What are the advantages and disadvantages to each?**

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Negative Punishment (unpleasant)

Taking away something….

- Time outs – removal of attention
- Release of pressure

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Named behavior mods

BAT
- Behavior Adjustment Training

CAT
- Constructional Aggression Treatment C.A.T. For Dogs

LAT
- Look at that (exercise only)

BAT – Behavior Adjustment Training

- This term was coined by Grisha Stewart, who wrote a book about it.
  - During this process, the dog tells you that she is heading towards her threshold by her stress signals, or by what are sometimes called calming signals.
  - When you see the signals, you allow her to retreat, thus reducing her stress.
  - Generally, this technique doesn't use treats, although it can. It does require superb observational skills and knowledge of body language. At the least, it helps people learn to watch their dogs

CAT – Constructional Aggression Treatment

Developed by Dr. Jesus Rosales-Ruiz and Kellie Snider
- Essentially the opposite of BAT. Tester presents a second dog to a reactive (subject) dog at a distance
- When the subject dog stops reacting, the tester dog leaves.
- The process is repeated until the subject dog can get close to the reactive dog

C-A-M

Cognitive (Creative) Anthropomorphism Behavior Modification (!!)
- Assess the mood of the dog and help him change it
  - Turn fear into fun
    - Understand what motivates the dog when he or she is relaxed and comfortable – practice at home and in safe locations until muscle memory is strong
    - Work outside the dog's threshold until you are sure he or she is ready for the next step
      - If you are working with a fear aggressive dog and he will not willingly look back at you, you are too close or you have been working too long
    - Handler must appear relaxed and in control or the dog will read your energy and your efforts will be in vain

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Stuff

Intrinsically Punishing Behavior
- Stepping on a bee
- Putting your hand on the stove

Where does anticipation fall in all of this?

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