

HELPING THE CANINE STRESS HEAD

the brain and behaviour - what dog lovers need to know




MY MOTIVATION



TONIGHT



- Brain basics.
- What is stress?
- Emotions in dogs & the neurobiology of emotion.
- 
- Using what we know to help the canine stress heads.

BRAIN BASICS



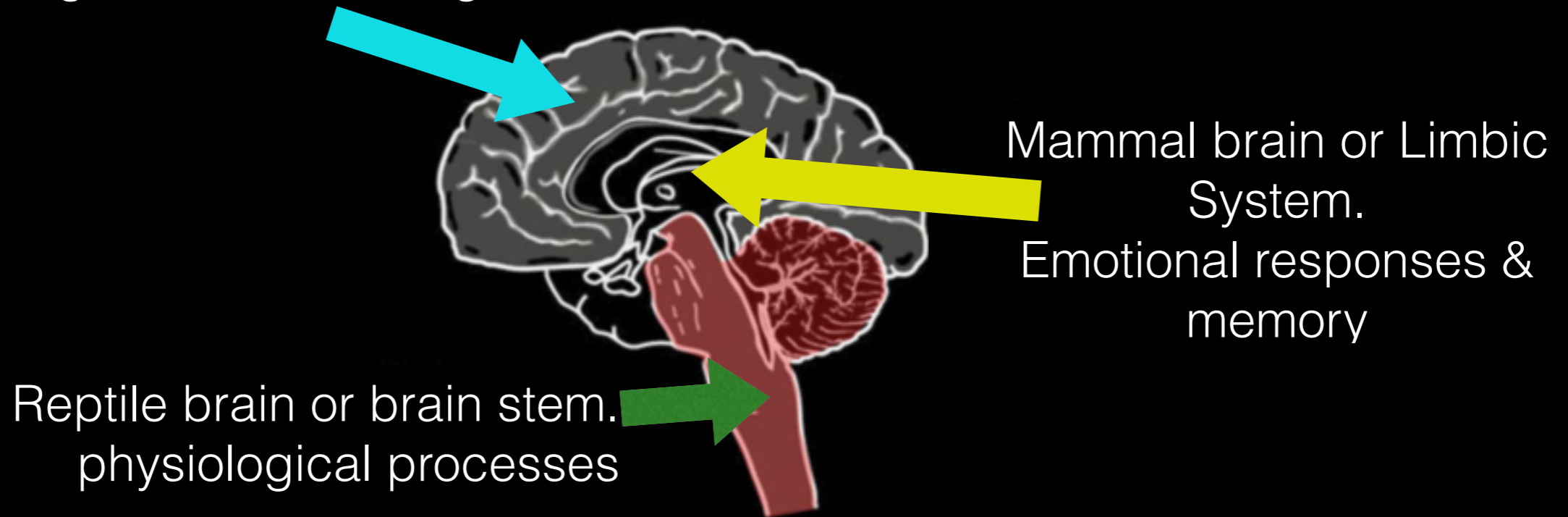
BRAIN BASICS - OUR DEFAULT IS SUSPICION

- Evolution of the mammalian brain provides us with a brain that is quicker to sense danger than safety
- Kept us alive to evolve, but now dogs have a whole lot more that triggers this system and it can easily become over ridden with stress chemicals which has us consistently sensitised - ready to react, even when there is nothing to react to.
- Better to be stressed than dead.



BRAIN BASICS - THREE BRAINS IN ONE

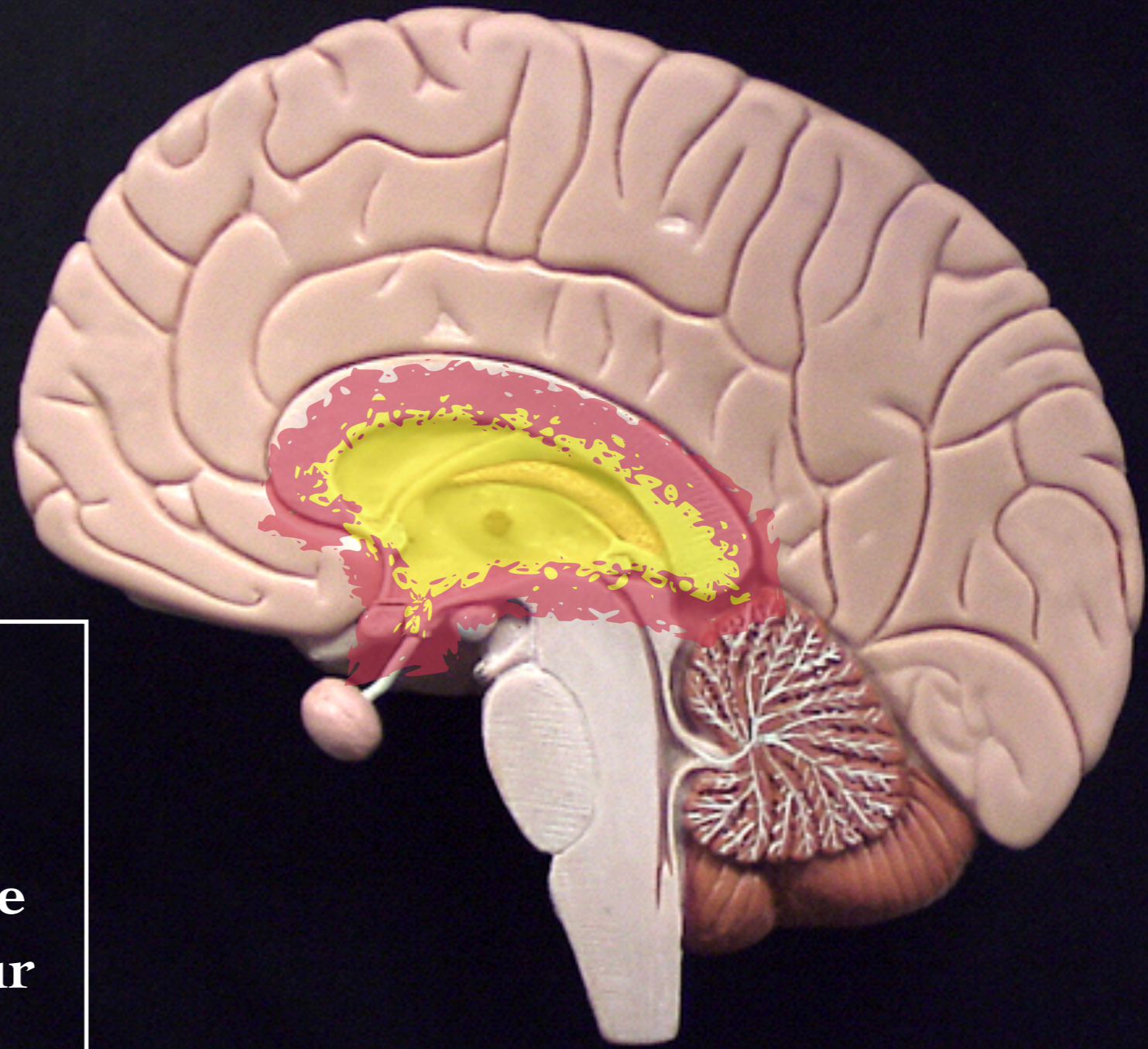
Primate brain or Neocortex.
Reasoning, decision making



- All mammals possess these distinct parts and they all work the same way
- The difference between species is in the neocortex
- Our main focus is on the **limbic system** - the seat of emotional regulation

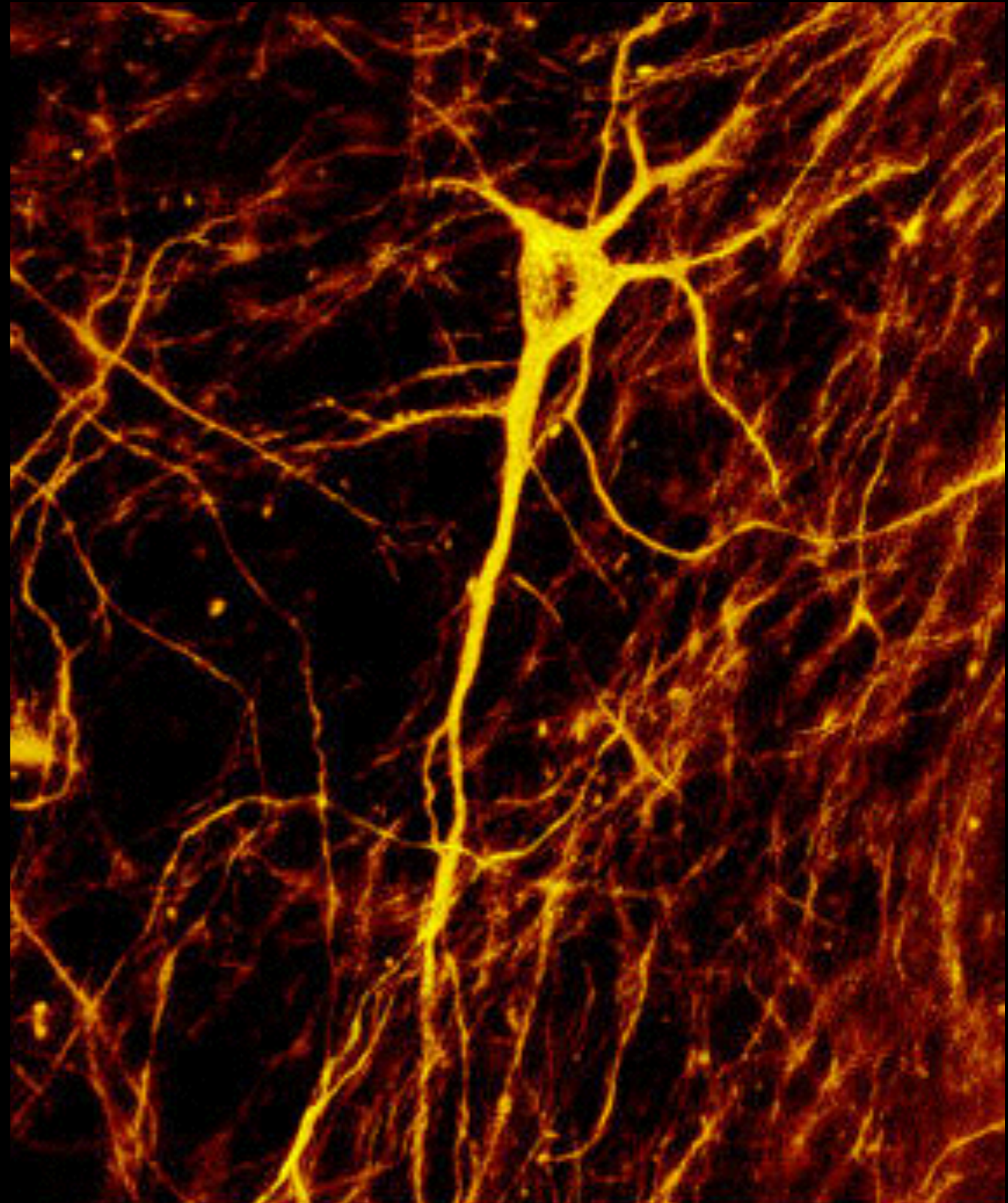
BRAIN BASICS - THE LIMBIC SYSTEM

- Amygdala, Hippocampus & Hypothalamus are central to emotion and memory
 - All stimuli go here before reaching our consciousness
- The limbic system will take control of our behaviour whenever we are confronted with a perceived threat or the chance to engage in behaviour that we find intensely rewarding.



BRAIN BASICS - NEURONS & PATHWAYS

- The brain is made of billions of neurons
- Each of these will have thousands of pathways attaching them to other neurons so they can 'talk'
- These neural pathways are continually being strengthened, weakened or added to based on our daily experience.





LEARNING, NEURON STYLE



new behaviour...



well practiced behaviour...

WHAT IS STRESS?

The body's **automatic physiological response** to a change in the environment that is perceived as adverse or demanding to aid survival.

Oxford English Dictionary.



WHAT IS STRESS?

- *Automatic* - you don't consciously control it.
- *Physiological* - the various functions of an organism, including physical and chemical processes.
- *Response* - the changes you make to environmental change
- *Survival* - don't die.



WHAT HAPPENS IN THE BODY?

- Information is sent straight to the limbic system - the emotion control centre of the brain.
- Chemicals travel the neural pathways and are released into the nervous system to prepare the body.
- Adrenaline, Noradrenaline and cortisol are big players. These chemicals will continue to drive behaviour as long as the stimuli remains
- We experience this physiological response as emotion.

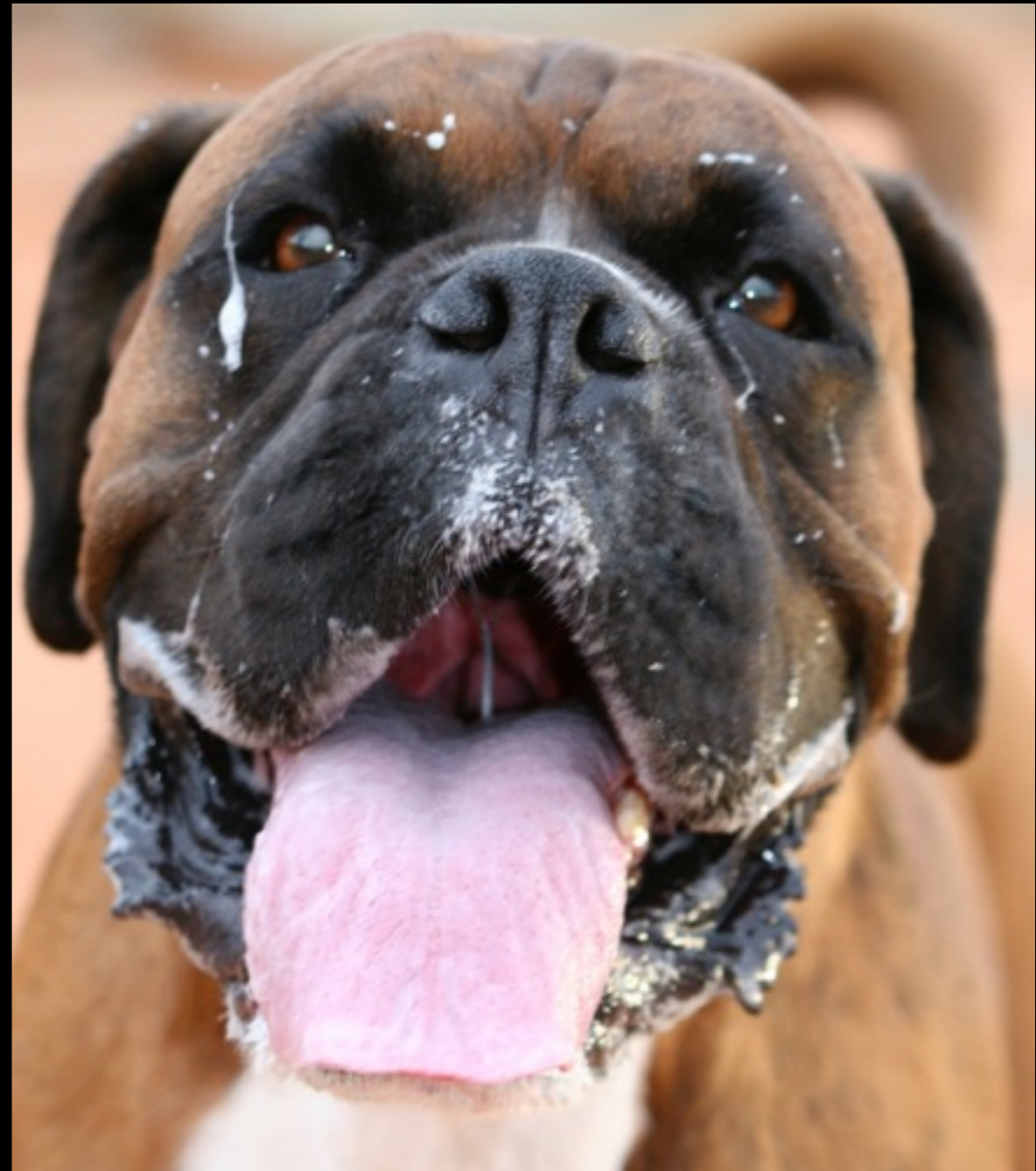


EMOTIONS, DOGGIE STYLE

Emotions are our limbic system's way of communicating to our forebrain what it perceives.

The work of Jaak Panksepp has identified 7 base emotional systems:

- ★ **SEEKING** (anticipation, desire)
- ★ **RAGE** (frustration, restraint,)
- ★ **FEAR** (pain, threat, foreboding)
- ★ **PANIC/LOSS** (separation, grief, loneliness)
- ★ **PLAY** (rough-and tumble, joy)
- ★ **MATING** (copulation)
- ★ **CARE** (maternal nurturance)



FEAR

- Fear is a universal unconscious emotional response to a perceived external threat
- Chemical changes in the body set the body up to either flee or fight
- Brain floods with stress chemicals causing heart rate to increase, blood flows to legs and arms and away from anything not vital, muscles tense, eyes widen and focus will become heightened to the stressor.
- If quickly dealt with, no long term damage



ANXIETY

- The body's response to an **expected or anticipated threat in the absence of a stressor.**
- 'Fooling around' behaviour
- **Disassociated behaviour** - body preparing for injury or death.
- Often what we refer to as 'scared of everything' or 'generalised fear'
- Chemical changes in the body are the same as fear, though often ongoing and chronic



AROUSAL - EUSTRESS

- Arousal is a moderate increase in alertness to a perceived reward
- Psychologists call this “Eustress” -
- A similar chemical response is occurring in the body, but the addition of **dopamine** into the system is what makes arousal feel so good.
- The brain can not maintain this for long periods. If the release of stress chemicals continues long term dopamine begins to be depleted.



BENEFITS OF STRESS

- Stress makes us more stimulated, more focussed and more prepared to face a situation.
- Improves mental strength, make us physically stronger, enhance clarity, improve our immune system, speed recovery from illness and injury and contribute to a greater and improved sense of self-confidence.
- **Short, regular, consistent amounts of moderate stress** are essential for creating a well adjusted adult.





“If stress is moderate, predictable and patterned it makes the system stronger and more functionally capable.”

Bruce Perry - The Boy Who was Raised as a Dog

WHAT FEELS GOOD?

- Our brains are set up to keep us alive and are constantly scanning for danger
- we have to work harder to build happy neuropathways
- Bad feelings always override good ones unless we train our brain otherwise
- Relationship research tells us we need at least 5 positive interactions to 1 negative with another individual to have a good relationship with them



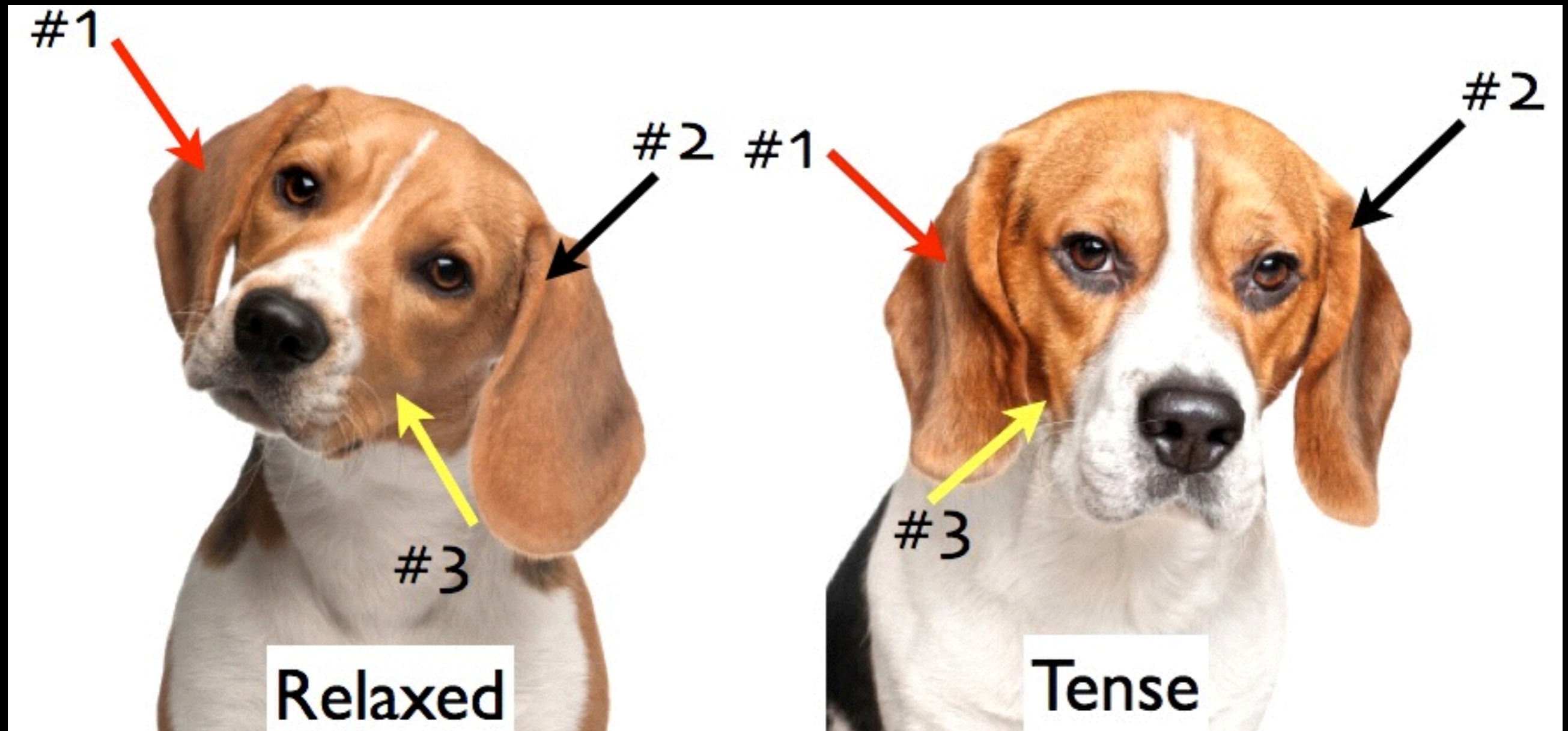
WHAT FEELS GOOD

- **Oxytocin** - The bonding molecule. Social affiliation, bonding & safety. The release of oxytocin turns off the 'flight / fight' response.
- **Serotonin** - The confidence molecule. Bolsters self esteem, accomplishment & belonging.
- **Dopamine** - The reward molecule. Motivation, drive, goal driven behaviour.
- **GABA** - The anti-anxiety molecule. Calming,

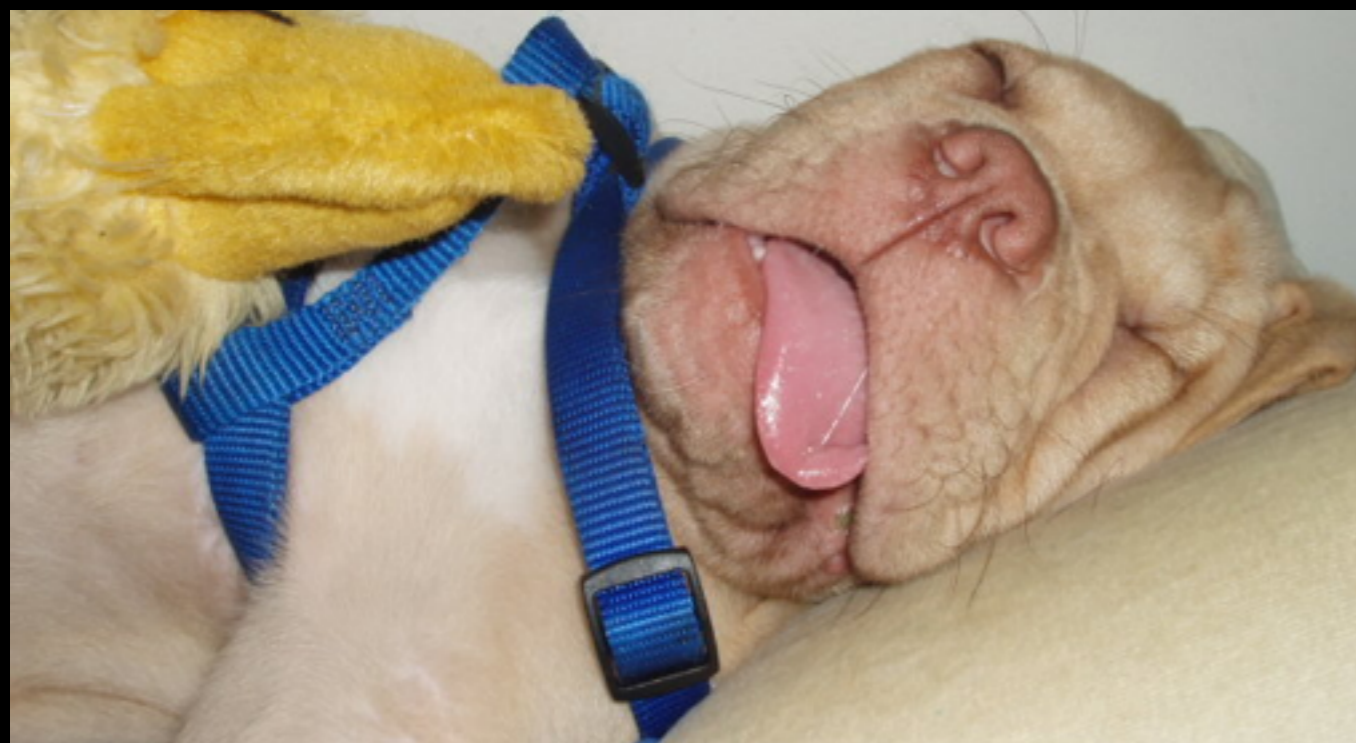


LEARNING TO SEE

Calming signals are well known, but few trainers spend conscious time observing dogs and never learn how to see at a micro level



LEARNING TO SEE



LEARNING TO SEE





WHERE DOES THIS FIT IN OUR TRAINING?

- Emotional change is a physiological change to the environment (**Antecedents**)
- Your dog is learning how to feel about things every waking minute of its life
- this is **classical conditioning** in action
- These emotional associations ready our brain and body, **setting us up** to behave in one way or another



CHRONIC STRESS

- Stress that is regular sets the brain up to be even more suspicious than our natural default
- This puts the brain in a bath of stress chemicals. If it goes on long enough neurons will die, various systems will shut down
- Counter conditioning programs to specific stimuli will be like pushing a boulder up a mountain - hard and with many regressions
- The stress level must be attended to in absence of the stimuli first



MASLOW'S HIERARCHY OF NEEDS





**first and foremost,
if it is too much for your dog, get it out of dodge**

YOU

- All of the information that follows is useless if you are stressed
- Dogs are highly sensitive to your emotions
- Mirror neurons in the brain of all social mammals - present to allow fast access to information about emotional states and potential behaviour
- You must learn to control your emotions if you are going to be of any real help to a stressed animal



BUILD SUPPORT ASSOCIATIONS

- Train Conditioned Emotional Responses to stimuli you can use when needed, these will prompt the release of the feel good chemicals they are associated with
- words
- specific touch
- beds, blankets, crates, the car...



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DOES HIGH DRIVE = HIGH STRESS?

- high arousal has the same basic physiological basis in the body whether it is good or bad
- If you have a reactive dog, you need to ask:
 - can your dog relax at your chosen sport?
 - can your dog relax while you work another dog?
 - how often do you do high intensity training?
 - can your dog fully relax?



WHEN GOOD STRESS GOES BAD

- Stress, even the good kind, is designed to occur in short bursts to enhance function - to gain perceived pleasures and avoid perceived danger
- Short bursts of moderate stressful energy feel good and are beneficial because the glucocorticoids promote the release of dopamine and help build stress tolerance.
- If it goes on for too long the opposite will occur - dopamine will be depleted and stress sensitivity will build.



REINFORCING FEAR?

- An emotion will not be made stronger by treating or praising in it's presence
- If the dog finds the offered stimuli more pleasurable than the negative one negative, you will begin the process of changing the emotional association - this is the process of **counter conditioning**.
- **Repeated, consistent** experiences like this will changes the behaviour because we change the emotional association to the stressor. That emotional change in turn changes the behaviour.





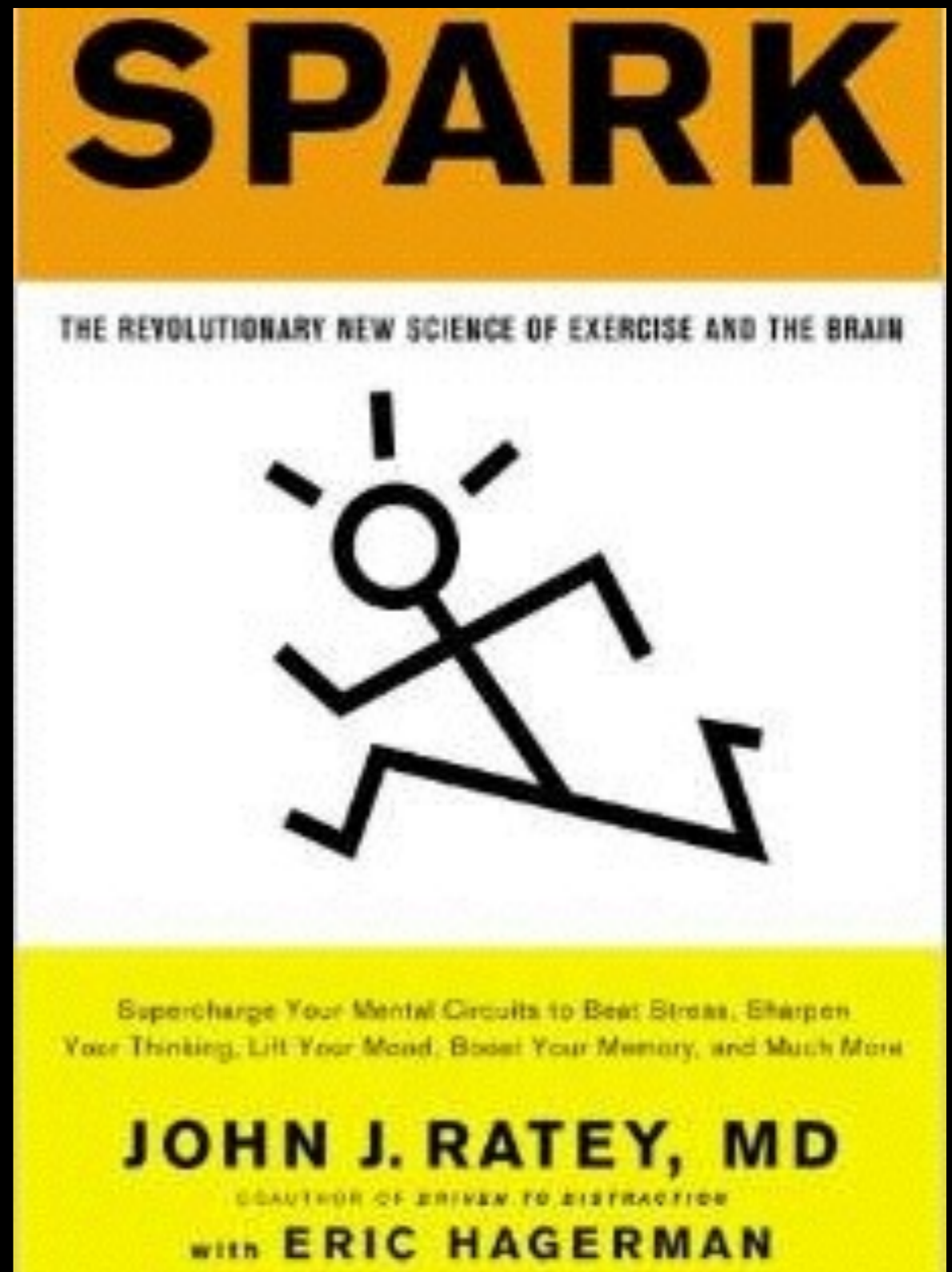
POSITIVE PHYSICAL EXERCISE

- Exercise involving moderate stress promotes the release of endorphins
- Add a mental aspect and you get more dopamine and serotonin
- Short is sweet. 1 - 2 hours at most
- Increases mental ability - oxygen increase
- If arousal goes overboard get the dog out of dodge.



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THE IMPORTANCE OF SLEEP

- On average 8 hours of uninterrupted sleep is required at least once a day
- Processing of the days events from short term to long term memory
- Deep sleep (non REM) is the fastest way to reduce glucocorticoids



THE CALMING EFFECTS OF DEEP TOUCH PRESSURE

- increases activity in the parasympathetic nervous system which calms us down
- promotes endorphin, dopamine and serotonin release
- reduces heart rate and blood pressure
- some dogs need to be taught to accept body suits, wraps and deep pressure touch, so always respect what the dog is saying
- “Moments, not minutes”
- <http://www.grandin.com/inc/squeeze.html>



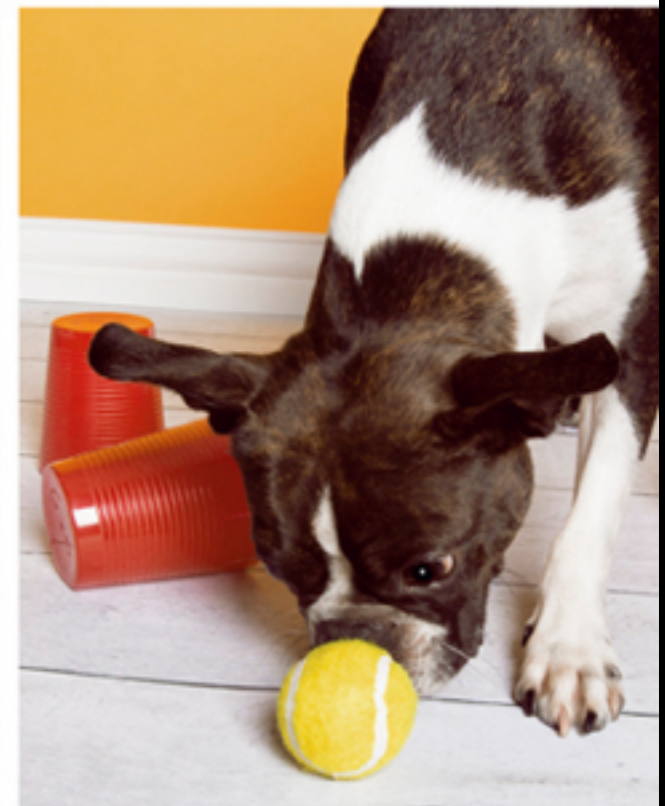
THE NOSE KNOWS - THE VALUE OF SCENT WORK



- Olfactory bulb is part of the limbic system - the first sensory information to get to the amygdala
- **SEEKING** system
- Surge of dopamine and serotonin which will increase self confidence
- Increase your ability to learn your dog's body language

OTHER EXERCISES TO PROMOTE THE GOOD GUYS

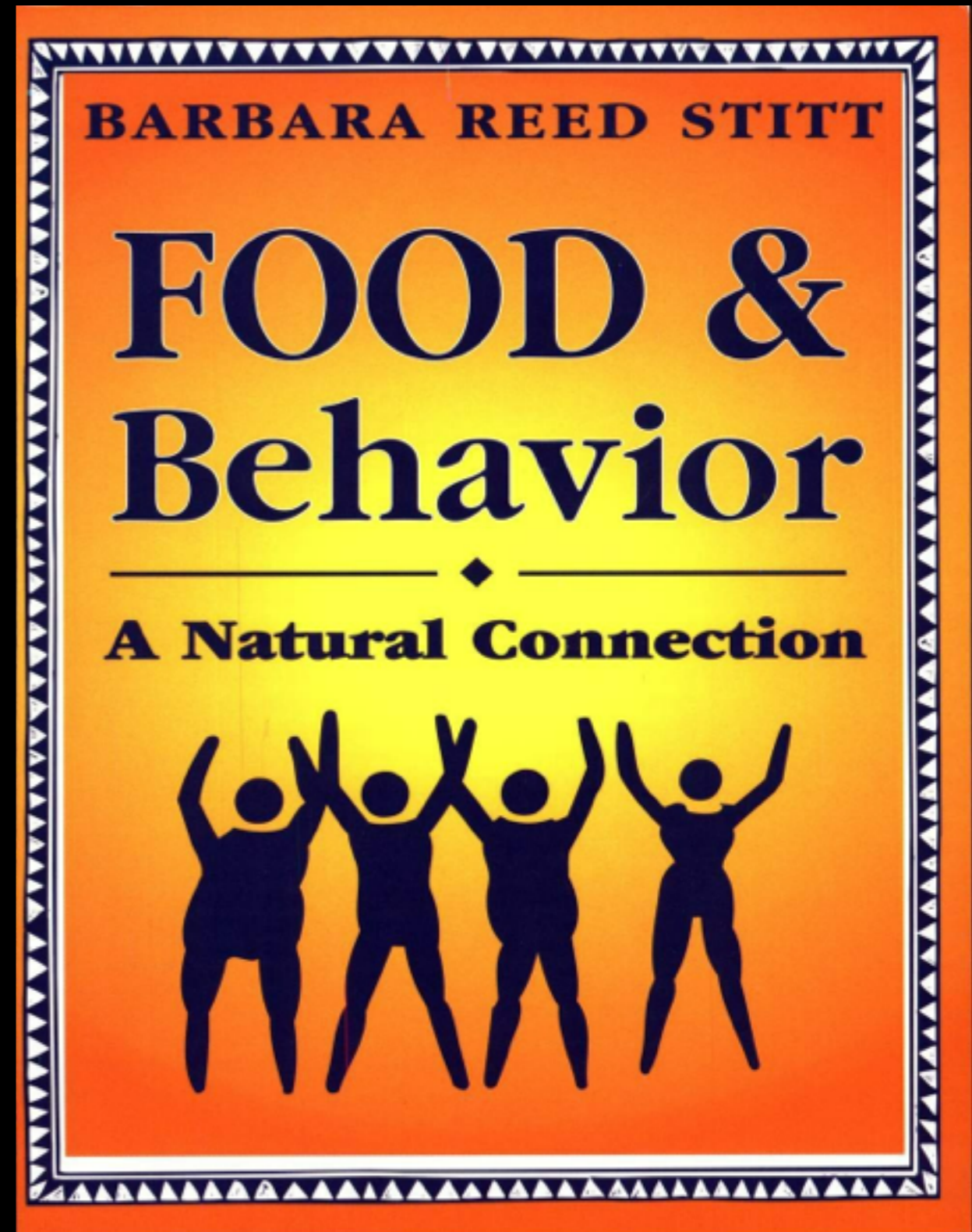
- Chewing - releases dopamine and serotonin. It encourages blood flow to the digestive system which triggers the release of these chemicals
- Trophy hunter / casuals - make the dog think that what he has is the best thing ever and you wish you had it - serotonin, and oxytocin explosion.
- Mental games - many and varied





DIET

- preservatives - treats
- protein source in dry food
 - tryptophane and tyrosine
- EPA & DHA fats (omega 3)
- carbohydrates
- Supplements:
 - melatonin
 - L-Theanine
 - Lactim



SAFE PLACE

- A place he can go where he trusts he is safe
- If there are other dogs in the house, it should be safe from them with the dog in question having access in and out
- Dark and tight is often favoured, often a pile of warm blankets where a dog can burrow into is immediately accepted
- Having this option is vital for dogs out and about as well



COMMUNICATION

- Teach the dog a behaviour to tell you when he needs a break
- Teach “*show me*” - a cue that tells the dog you will follow him and interact / help him with what he needs
- Teach “*we have to*” - a cue that tells the dog you know he doesn't like this but it has to happen
- Watch body language and respect it whenever you can
- Honour the communication - allow him to build trust in you



THE POWER OF CHOICE

- The freedom to make choices is considered a primary reinforcer
- Studies with children and animals show us higher cortisol levels and lower dopamine and serotonin levels in the brain.
- Provide opportunities to make choices where you can, make the dog think it was their idea and you have gone along with it



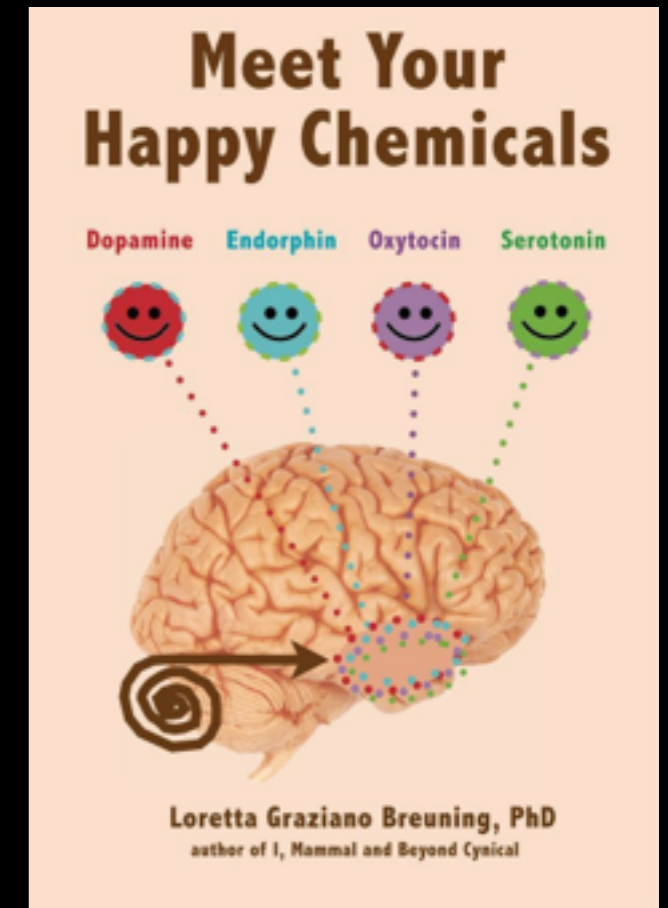
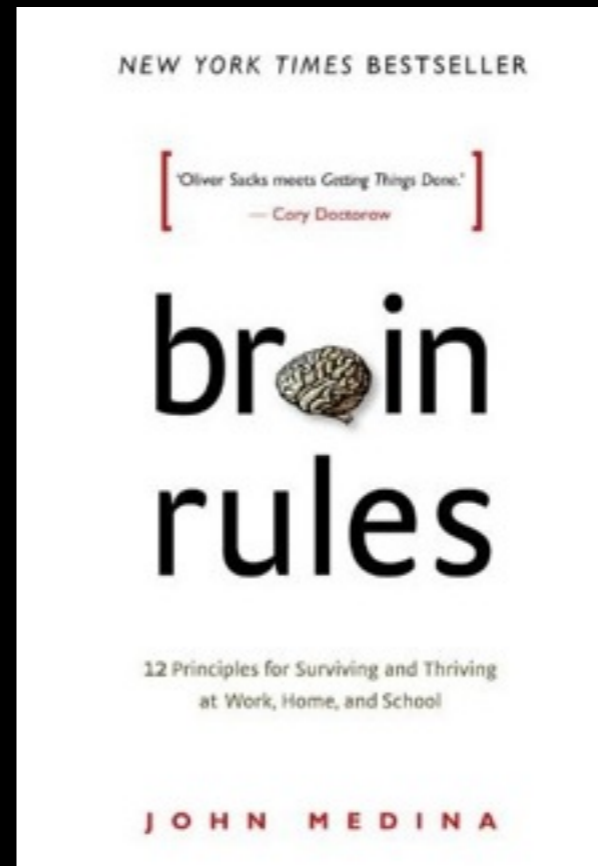
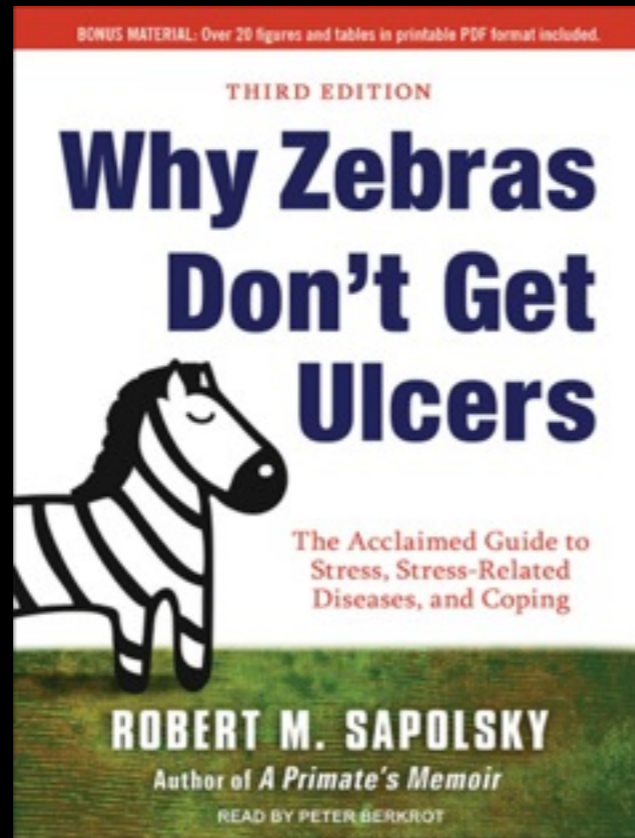
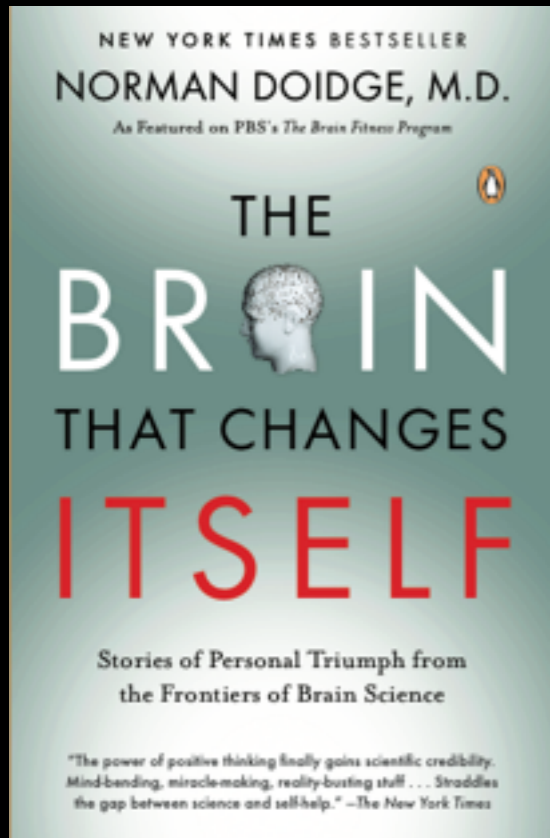
SPLIT EXPOSURE, DON'T LUMP

- Exposure to any stressful situation should be short
- When **counter conditioning** a smaller amount of reps where the stressor is paired with an large amount of an extremely valuable treat (think a half chicken breast) are more beneficial for building neural pathways than more reps with small 'treat sized' pieces.
- This prevents the corticoids from flooding the brain while still allowing the new pathway to be paved.



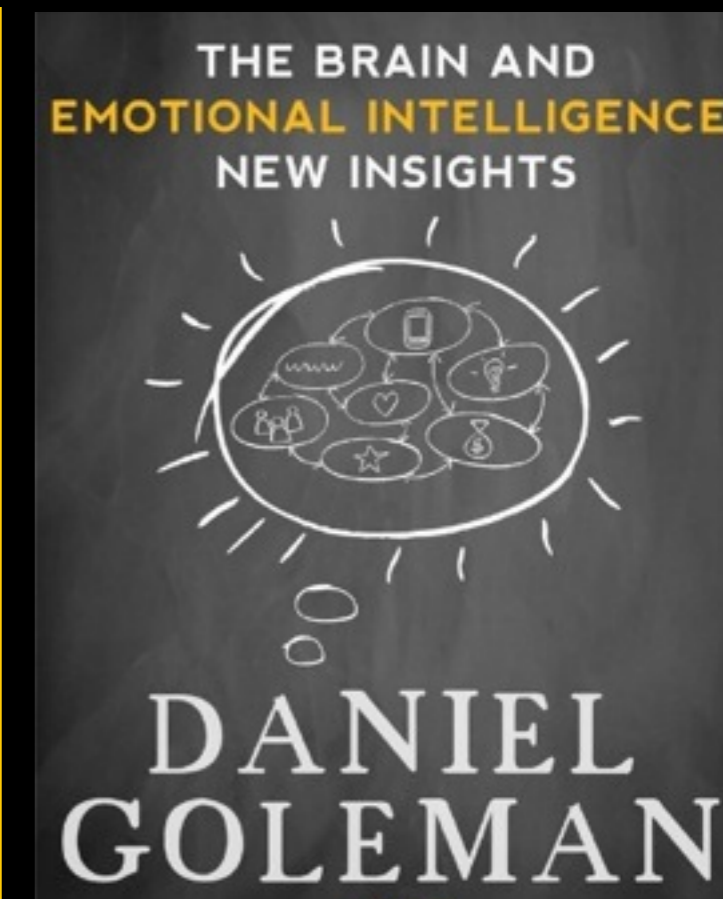
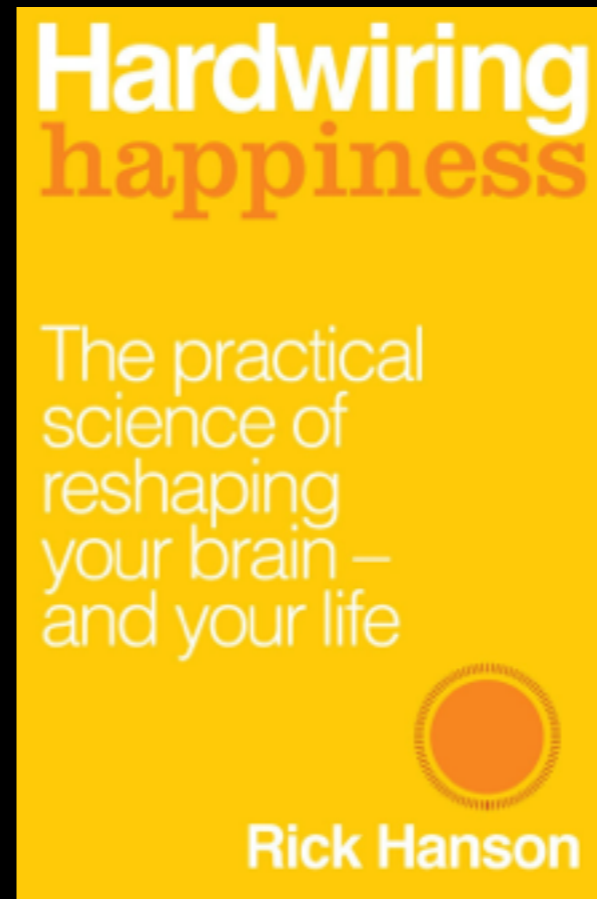
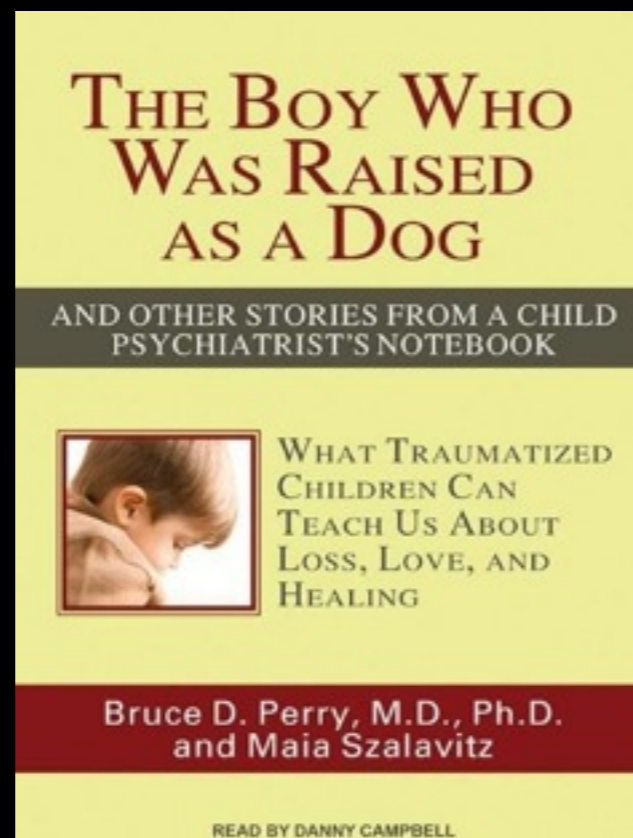
CELEBRATE EVERYTHING





How Dogs Love Us

*A Neuroscientist and His Adopted
Dog Decode the Canine Brain*



OVER TO YOU

We are all wired differently. It is up to us to give our dogs the best to bring out their best. I hope this information helps you to do just that.



thank you!