

Have We Thrown Out The Baby With The Bath Water? Understanding Emotions and Their Place In Training.

It often comes as a surprise to people that I was not one of those girls who had posters of ponies and puppies plastering her walls as a child. I liked animals and we always had pets as I was growing, but I was never interested in a career with them. My interest in animal behaviour started after my life took a pretty harsh turn at the age of twenty – one of those curves in the road that make you hang on for dear life.

It was early evening and I was heading back home after meeting a friend for coffee. I had called into the ATM to pick up some cash for the week and decided to take a shortcut up a backstreet. This simple decision changed my life. Like all traumatic events that can occur in a lifetime, being raped and the effect it has on you can never be understood by someone who is spared. While the event itself probably lasted no more than fifteen minutes the ramifications, as I am sure you can imagine, lasted a lot longer. Three years after the event my emotions held me captive. I couldn't leave the house. Anxiety attacks filled the day, nightmares tore apart any chance of escape at night. It truly was a dark, dark night of the soul.

Interestingly enough, it was this curve in the road that set me towards a destination I would have never dreamed of. Three years after the event I was still suffering from agoraphobia and in an attempt to give me something else to focus on an eight week old boxer called Russell Clarke came into my life. The rest, as they say, is history. He was the first dog I ever fell in love with and gave me all I needed to push myself towards a place of healing and – a surprising side effect - a career as an animal trainer. Suddenly I had something that needed me. Russell took me from focusing on my fears to focusing on his needs which obviously included socialisation, walks and training. He had to get out, which meant I had to as well. I began to find that fulfilling what this little pup needed made me happy. And happy and fear don't mix.

Healing from such an ordeal however, isn't something that happens overnight, no matter how much you love your boxer. He was my emotional crutch for the next 12 years and in the time between now and then I have read literally hundreds of books based around two subjects: animal training using positive reinforcement and personal development / self help. I have found that the career I never chose has not only provided me with some great stories and terrific memories, but every day continues to teach me about the central importance of feeling safe and comfortable for a good life no matter how many legs you have. Over the years I have begun to see more and more parallels between the work I do with my animals and the work I do on myself.

Like many of you I adore my work. While I consider myself a dog trainer first and foremost, I feel eternally blessed to have had a career as professional exotic animal trainer in the zoo industry. One of the gifts this job gives me is the chance to look at dog training with an exotic trainer's mind. I have learned a great many things that help me be a better dog trainer by training parrots and seals. Working with wild animals does not come with the luxury of domestication. This means that aspects of their instinctive behaviour are much easier to observe and a wrong training decision can have dire (sometimes life or death) consequences. The dog's intense desire to simply be with us, thanks to their innate social nature and the domestication process often suffocates instinct and forgives bad training decisions.

I believe the main reason I can turn my hand from an eagle to an echidna with relative ease is because I know and trust the scientific principles of learning. Over and over again, when I base my training on what science tells us about how behaviours grow, are maintained, and die it works like a dream. So, for the past fifteen odd years this is what I have taught: That the most important aspect of animal training is a solid working understanding of the behavioural sciences and the skill set to use them practically. Nothing has changed there. Analysing behaviour via proven principles gives us a way to look at our animal's behaviour without projecting our own beliefs and feelings onto the situation. That's incredibly important for good training. You only need to look at some of the popular TV shows on dog training to see just how messy it can become without science. The thing is, the idea that animals are non-emotive beings, or that these emotions aren't important for us to acknowledge is difficult for many of us to grasp. At the sake of having to suffer disappointed looks from my peers, I have to come out of the closet and admit that I am one of them.

The older I get and the more experience I gain working with animals; the more I see a need for an acknowledgement and awareness of both our canine buddies and all animals as emotive beings. But we have to tread carefully here. While I have come to understand that anthropomorphism isn't the sin I once thought it was, we all have a propensity to dump our own emotional issues onto our animals and allow them to colour our point of view. If we are to explore this subject we must be self aware and honest. We also must be open to different points of view. Any time we acknowledge the possible influence of emotions on our animal's behaviour we must balance this against the solid foundation of what we know about the principles of learning. Without them we are standing in a building that will inevitably fall.

Theories about emotions stretch back at least as far as the ancient Greeks (as does everything it would seem). Who we are, what "mind" is, why we do the things we do and how we differ from non human animals are all questions that philosophers and later psychologists still strive to answer today. If we climbed into a time machine and whisked ourselves back to the early 1900's, we would be forgiven for thinking that we pretty much had the question of emotions all sown up. Charles Darwin would have recently published a book dedicated to the similarities between the expressions of human and non human animals. In "The Expression of the Emotions in Man and Animals" Darwin observed these similarities and used them to connect mental states to the neurological organisation of movement - namely facial expressions. By the turn of the century, William James and Carl Lange had identified the link between bodily responses and emotional statesⁱ, suggesting that all emotions are developed from and can be reduced to physiological reactions to stimuli. They argued that instead of our emotions driving us to reflexive and operant responses, it was in fact these responses that led to the emotional states. If this sounds no more useful than the old "which came first, the chicken or the egg" question, you are in for an interesting surprise. The point for now is that ethologists, psychologists, and sociologists from the turn of the century produced a lot of interest and discussion on emotions, both in humans and animals which got pushed to the back burner with the birth of modern science. The importance of being able to quantify your work, and to measure and observe became vital. This focus gave birth to the science of Applied Behaviour Analysis and the principles so important to us in our training today. The trouble is that this emphasis made emotions a difficult, some would say impossible subject to study.

Today we have new ways of looking at the brain. Since the 1990's various brain imaging techniques have

paved new roads for those of us interested in emotions, to travel down; creating some pretty amazing scenery to observe on the way. It is this technology that has allowed us to once again turn towards the scientific study of emotions. Many different scientific disciplines are studying emotions in full swing today and while there is still a lot of argument over what emotions are, what animals share with us, and what they don't, and if they are even conscious of their emotions. Many scientists now see the need for certain emotions as being central to survival. The amazing neurobiologist and psychiatrist, Jaak Panskepp, has been looking at emotions from a number of different scientific angles for decades. By combining his knowledge of ethology, experimental psychology, and neuroscience, he has been able to give us an understanding of several emotional operating systems shared by all mammals. Panskepp argues that emotions are not some luxury of 'humanness', but are an integral part to the evolution of a species and survival of individualsⁱⁱ. We will explore two of Panskepp's systems – the SEEKING system and the PLAY system, and how we might use an understanding of them further on.

While Darwin made good sense when he observed the similarities between the expressions of mental states of human and non humans, being able to look inside the brain has given us a supporting act to the outside show. We have known for a long time that all mammals share the same brain structure. Whether we are a dolphin, a dog, or a human, we all have a wrinkled cortex atop a creased cerebellum, with a brain stem leading to the spinal cord.ⁱⁱⁱ We know that the process of emotions in humans involves expressive behaviours, physiological arousal – an internal chemical change, and conscious experience. In animals we can all observe expressive behaviours and thanks to modern technology, we now have a window on physiological arousal. As far as conscious experience goes, well, lets just not hold our breath shall we? I think for many of us though, both scientist and layperson alike, the old Meatloaf tune “two outta three ain't bad” springs to mind.

So the first question is what is emotion? Surprisingly, for something we all experience every day, it's amazingly difficult to define, even in ourselves. Emotions are obviously feelings... but that makes things no clearer. Science gives us a number of definitions, most focusing on the facts that emotions are psychological phenomenon which assist in behaviour management. They are, quite simply, messengers that help us react to our world^{iv}. We are often not even aware of the ways in which emotions guide our behaviour. Leading research has shown that for people who have damage to parts of their limbic system, the part of the brain many see as being the seat of emotions, decisions about even the most simple things become impossible.^v We are quite literally lost without them. Sometimes though, for both humans and dogs, these messengers seem to go a little astray.

Numerous structures in the limbic system play a part in the complex relationship between emotions and behaviour. The amygdala for instance helps guide our behaviour – when to eat, when to move - to generally keep a low profile; to ensure safety above all. Millions of years ago, we needed the amygdala to take the drivers seat regularly.^{vi} If there was a tiger in the bushes, it was better to act now and think later. This was the amygdala's job. It knows that if it were left to your conscious control you would umm and ahh and stand around thinking yourself to death. In fact, research has shown that when information enters our brain, it is fast tracked to an area of the brain that assess, with more than lightening speed, the information from a life or death perspective. It gets there long before it gets to your more analytical areas. Who wants to stand

around debating and find out they were wrong?

Today our limbic system is still as active as ever, but as we have evolved socially very quickly, it can sometimes get us into a lot of trouble. Even without tigers in the bushes, this part of our brain still has a huge influence on our behaviour and is still as vital as ever in life or death situations. Trouble is, it seems to think some situations are life or death even when they are not. Bank queues, speaking in public and being cut off in traffic can all have our limbic system working overtime. It prompts us to keep our thoughts to ourselves lest we be outcast. It guides us to do whatever it takes not to attract attention - It's happy in mediocrity. It will invent countless reasons, excuses, emergencies, illnesses, and distractions in order to get us to not risk 'safety'. The amygdala, with all the best of attentions, can really get in the way of a happy life. More and more self help material is being based in what science is learning about our ability to rewire our brain and to take back control of emotions. It turns out that we can actually change the behaviour of our brain in a similar way to the way we can change the behaviour of our dogs. We can teach it them both not to be so reactive^{vii}.

Our dogs also have a limbic system. All mammals do, and they share a similar story with our own. Their evolution and domestication has been quick. We invite them into our homes with a fully functioning limbic system. Behavioural problems like aggression, separation anxiety, excessive barking, and self mutilation are all prompted by intense emotional states^{viii}. What's the biggest problem? Dogs can't read. It's up to us to use our big cerebral cortex to figure out just how to help them establish emotional stability in this mad man-made world.

At the most fundamental level, how we feel about the world boils down to what experiences we have had to date and whether we have processed these experiences as good or bad; and how we process the experiences that life throws at us is predominantly shaped by whether we believe we have gained something or lost something in the process. This in turn shapes our emotional responses and creates pathways for the future flow of these emotional habits. If, for instance, we spend more time in a happy, optimistic place, our brain builds more, bigger, stronger pathways for these feelings. It becomes easier to have a positive outlook and things that frustrate the hell out of another merely make us shrug and smile. That's why daily practices of conscious, positive affirmations work. They are literally sit-ups for the mind^{ix}.

Normally when we think of training a dog, we don't think about training emotions. We think of overt behaviours. We focus on the sit, the jump, the eye contact. - Operant conditioning in action. But classical conditioning always comes along for the ride, and it is via this process that our dogs learn how to feel about things.^x Many of us know of classical conditioning, if only in the way our dogs learn that "click = treat", but classical conditioning is far, far more. No matter how experienced the animal or the trainer, no matter what behaviour we are working on, all animals have a long history of biological evolution that includes built-in emotional responses that may be elicited by environmental stimuli, events, that suddenly take control of the driver's seat in the brain^{xi}. We all have had first-hand experience at being overrun with emotions to the point that we find controlling our behaviour difficult. Phrases like "I was out of my mind with rage" and "I was so angry I couldn't think straight" or even "high as a kite" are common because we have all been there; and it turns out sayings like these are actually quite literally spot on. Research into the brain has shown us that when we are highly emotional, the limbic system is running the

show - guiding us to behave as if it is a life or death situation^{xii}. Rationale doesn't come into it – the strong emotions are there “saving our lives” and the ability to reason, think clearly, or respond to learned commands, quite literally goes out the window. It really is a time in which cookies just ain't going to cut it. High emotional responses inhibit the cerebral cortex from working well. Better to react now and think later. So, no matter how well trained your behaviours are, if your dog is in a highly aroused state, forget it.

The malleability of a young mind is a wonderful thing. The importance of the early critical periods for young dogs speaks to this. We all know that the experiences a young dog gets during this time will influence their adult behaviour. Like protein, fat, and vitamins, positive interactions with other dogs, people, and objects are vital for the growth and development of a dog's brain. Getting your puppy out and about is not about letting them experience stuff willy-nilly. It should be about actively training a pleasant conditioned emotional response to everything the dog may come into contact with in its life. While genetic differences will still influence behaviour, we know that it is experiences which dictate the way genes are expressed. What goes on at a neurological level during this period is the building of bridges, called synapses, between the neurons in the brain^{xiii}. This is the 'wiring' of the brain, but having certain experiences, so it turns out, wires brains differently. New pathways called dendrites between cells are constantly being formed, while others are pruned away throughout an animal's life, but never more so than during the early stages of life. And as it turns out, the more you practice a specific feeling, the better you get at it.^{xiv}

Experience and the emotions that get triggered by these experiences literally build bridges for emotions to travel across. The more general the dog's positive associations are, the easier it will be for it to feel good about anything new it may come across later in life because those good feeling bridges are strong. The trouble is that sometimes the activities designed to increase positive associations allow for other emotions to be practiced and perfected. Socialisation with other animals and people often creates a conditioned emotional response of high arousal. Puppies get excited. They jump up, pull on lead, they wriggle, vocalise, and perform other numerous behaviours prompted by this excitatory state that repeated socialisation practices often allow. In the name of introducing the young dog to all these new things to prevent fear and aggression, the exercises sometimes create a new set of problems for the owners.

While socialisation practices are important, it might serve us to add some emphasis to the practice of being calm in these situations. Rather than just teaching them to accept and feel good about their world, teaching them to respond calmly will undoubtedly prevent a lot of stress for both the dog and their humans later in life. Remember, we are building bridges in the brain. From the beginning, puppies need to develop the neurological pathways that assist them with reacting the desired way as the default for the rest of their lives. If we understand the relationship between body and mind, we can begin to see that by reinforcing calm body language, we can strengthen this as the default emotional response. Jaak Panksepp, an amazing neurobiologist and psychiatrist, gives us detailed information into neurological structures involved in the presence of different emotions and links these with common observable behaviours in mammal species.^{xv} All emotions have a basic set of physical movements and facial expressions, which he argues, are both action oriented and have a deep communicative and observable behaviour. “Calm” looks like this^{xvi}:

- no tension in the body. Body is 'soft' and fluid if dog is moving.

- body carriage neutral, head can be held low
- slow, sloppy movements
- tail is in a relaxed position – not rigid in an up or down position
- squinty , smiling eyes
- big deep breaths or sighs
- relaxed yawns
- stretching

There are several exercises we can give our clients to assist with helping them develop emotional regulation, or what we commonly call self control. The great thing about this is that once the dog has experienced calmness and self control working for it, this will become the default emotional response and behaviour set. They start to generalise and utilise it in all areas of life. This has a flow on effect. In humans we see a huge number of benefits from relaxation exercises like meditation and massage. When we are relaxed we^{xvii}:

- release tension in tight muscles, allowing better ease of movement
- have lower blood pressure, decreased heart rate and breathing rate. A calm heart rate releases tranquillising hormones that promote feelings of harmony toward others.
- stabilise blood flow to muscles
- slow our metabolism
- strengthen our immune system
- release dopamine and serotonin, neurotransmitters associated with feelings of pleasure and well being

Given the similarities between all mammals, it would be safe to assume that the same benefits would be experienced by our dogs.

The Exercises.

- You're all Gooney. Reinforce calm, relaxed body posture. Capture it where ever and when ever it happens. Teach your clients this on the first night of class. Reinforce all the behaviours listed above whenever they are displayed. Many therapies for humans include movement and conscious body work based on the premise that using the body in this way will help manifest a feeling by re-stimulating the activation of a related brain circuit.^{xviii} My zoo colleagues and I do this every day when we step out on stage to present a show. When you are dragging your feet at the end of a long seven day working week and you put your shoulders back, chest out, and a big smile on your face to present a show, you are left in a much better state – both emotionally and physically – simply because you have held your body in a way that has activated those circuits in the brain; and as we know, the more we do it, the easier it gets.
- Name It. Condition a word or phrase that is associated with a calm situation “Easy there”, “You're my cherry pie” are two I have heard used. I don't get people to use “good” or the dog's name that

will be used at times the dog is in a different emotional response. I usually get clients to do this at night time when the dog is sleepy at first to ensure success. Remember we can link a word or other environmental stimuli with any emotional state. Emotions are being associated anyway, the more we are conscious of what emotions are being elicited from various places, situations, and stimuli, the better we will be able to assist our dog and teach them appropriate emotional responses.

Appropriate emotions means appropriate behaviour.

- When You're Ready. Wriggling puppies that are being held don't get put down. Only calm, relaxed animals get released from being restrained. Some puppies find being held and restrained very stressful, and it is important to remember we are training these behaviours and increase criteria over time. Using negative reinforcement like this will greatly influence the positive overall emotional state of an animal to being handled and restrained, which all animals in the human world need to learn. Positive reinforcement can also be used to condition a positive conditioned emotional response to handling and restraint. Massage of a young pup can also greatly assist in the association of positive emotional responses to touch and restraint. Much has been written on the "T-Touch" program and is great to include in the daily experiences of a young dog. Suffice it to say here that generally we find firm touch tends to calm and a very light touch tends to excite. The work of Temple Grandin is well worth exploring in how to best develop a calm and non fearful response to handling and restraint.
- The stays have it. Putting duration in as your initial criteria on basic behaviours like "sit" and "down" from the beginning greatly assists the dog in developing a calm, patient response. Release with a release cue and as above, only when you are seeing calm body language. I want the dog basically refusing to get up. Along these lines, teach a duration target first, not a quick "touch". Quick, jerky movements create arousal. Duration behaviours, in which the dog holds itself in a relaxed position (not tense and rigid) create a state of calm. Remember that different cues can be placed on different versions of 'lay down'. Obedience trainers who want a quick "get up" from a "down" during a heeling pattern, for instance, would be wise to condition a 'relaxed down' cue and a 'get ready' down cue for totally different versions of the down position. . One switched on trainer in New Zealand conditioned his kelpie pup to lay on his side as a way to calm the dog down. As an adult the cue could be given with the conditioned behaviour visibly affecting the dog's internal state. As the trainer told me, "You could see the brain land"^{xix}.
- Approach / Retreat. This is a behaviour I do first lesson in all work with puppies and with rescue dogs. The dog is tied up and the owner walks away. It is approached without the handler giving a cue or saying anything at first and as soon as the bum comes off the ground or front feet leave the ground (depending on what your criteria is) you turn and walk away without saying a thing. This is repeated as many times as you need until the criteria is met – you are patting a pup with his butt or four feet on the ground. I increase the criteria to get to the point where I am literally begging the dog to jump on me – patting my lap, talking excitedly, direct, inviting eye contact. If it jumps, I shut up and leave. Usually it takes about 6 – 10 reps with an 8 week old puppy to get to this stage.
- Your dinner is ready, but you ain't getting it yet. It's exactly as it sounds. I make the pup's meal,

making sure the dog knows what's happening. Then I put it on the table and go about some other business. When the pup exhibits calm behaviour, the dinner is theirs. This is done for enrichment items and any thing else, that with repeated exposure, may provide a little too much practice in inappropriate excitement.

- Play and Stay. A game designed teach the regulation of emotions. The more practice the brain has at going from high emotions to a calm state, the easier it will be for your dog to focus and think after a situation that had him aroused. Your pup needs to have some concept of down / stay / leave it before playing.

The PLAY system, as put forward by Panskepp^{xx}, is about active physical engagement with another and improvisation. The rough and tumble play exhibited by all healthy young mammals facilitates the learning of physical and social skills by helping establish good clear flexible boundaries and a good sense of others' boundaries as well. It engages the parts of the brain linked to bodily awareness and the processing of information from touch. It enables us to practice and experiment with the possibilities of our behavioural repertoire. It is vital in creating and reinforcing relationships. Its hallmark is laughter.

One of the interesting things to come out of the study of child development is the different styles of play a child experiences from adult males and females and the effect these styles have on emotional regulation. While females keep the play at a fairly constant low level of arousal, the males whoop it up, getting the child extremely aroused. Then they will calm them back down again. This is a cycle of play that provides an opportunity for the animal to experience a wide range of emotions. It gives the child a chance to learn about his own emotional regulatory states and practice them. Research shows that children who do not experience this kind of play during the first five years of life have a much poorer control of their emotional states than kids exposed to the rough and tumble of 'dad play'^{xxi}.

- Hide & Seek. One of the most interesting theories put forward by Jaak Panskepp is the emotional system he calls the SEEKING System. He sees this emotional state as crucial to survival. It is the basic impulse to explore your environment and the feeling of anticipation of something good. It manifests itself in states of curiosity, excitement and pursuit^{xxii}. Winnie the Pooh was onto the SEEKING system when he thought "...[that] there is a moment just before you begin to eat which is better than when you are actually eating..."^{xxiii}

As usual, Pooh makes sense, as it turns out that the feel-good neurotransmitter dopamine is at its highest levels when the animal is in this state – anticipating something good actually feels better than the getting of it. Dopamine creates a feeling of empowerment and interest. Humans in this state report feeling giddy, excited, and joyful^{xxiv}. Playing games like hide and seek with a young dog and formally naming who or what they are finding creates a great foundation of relationship as this emotion gets associated with you. Training games like 101 things to do with a box with a well-conditioned bridging stimulus is also a great way to satisfy this emotional need. But the over-activation of the SEEKING system can be a trap. Panskepp describes some animals in this state as "excessively excited, even crazed."^{xxv} In the study of human behaviour, it is this state that is linked with addiction.^{xxvi} Anyone who has had a ball crazy dog gets the picture. Basically,

activation of the SEEKING feels really, really good; but it must be controlled by and associated with the owner. Activation of the SEEKING system should be balanced with calm 'down time'.

All of these exercises should be gradually increased in difficulty. Remember, you are watching the dogs body language as an indication of it's internal states. Increase not only the distractions, but how calm the dog has to be to gain the desired consequence. Your reinforcement can also be changed. As all stimuli will elicit certain emotional states, understand that by using different reinforcers you will change the difficulty.

Asking your dog to lay down and stay in a relaxed state for a bit of kibble is much easier than asking him to do the same behaviour for a game of tug. Work with them, rather than against them, to ensure that you both end up with a wash of oxytocin in your brain. Bliss.

As dog lovers and live withers, I know I have nothing to convince you of on the question of canine emotions. Regardless of what science says most of us believe our dogs are highly emotive animals. We see it everyday. We know their ups and downs. We know one personality from another, the "Nelly nervous" and the "Joe Cool". We know them through the behaviour they present to us. Like humans their behaviour is a window to their minds. It is who they are. And it is with this observable behaviour that we must start and finish. With no way on a daily basis to whip out the instruments needed to gather data on chemical levels or brain activity, we must rely on our interpretation of body language to provide us with clues as to what our dogs are focusing on and feeling. Our observations, if they be good, give us a heads up what behaviours they may display next. Thus, the ability to skilfully observe and knowledgeably interpret the body language of our animals is vital. Learning to understand behaviour in terms of it's relationship to it's consequence is eternally important. It has allowed thousands of animals worldwide to live lives free of fear and oppression from punitive training techniques. This must never change. It all comes back to our observations. It all comes back to behaviour.

But the emotionally sterile world of the behavioural sciences is a foreign land for our clients. It ostracises us. While many of us argue that it is the natural tendency for people to understand the hierarchical mode of dog training because we live in a similar social structure, I have a feeling (pardon the irony) that it may just be that with these modalities, it is the ease with which people can relate with the dog emotionally that draws them to it. We need to face it that the dry, emotionless behaviourist approach needs to be presented in a way that makes more sense to the average dog owner on both an intellectual and emotional level. We need to do it once more, but this time with feeling.

For me personally, the experience of being raped and the emotional disorders that held me captive for all those years are long gone. Today, I am one of the happiest people I know thanks to what I have learned from my study of positive reinforcement training, behaviour, personal empowerment, and my drive (there's that SEEKING system in action) to gain back control of my life. It's not always roses for sure. From time to time environmental stimuli will come my way to wake something buried deep in my limbic system and I feel the quickening of heart and shortness of breath that I know all too well are the beginning of an anxiety attack. But I have tools, a bag full of them, which allow me to take back control quickly and effectively; and I can't help but believe that it's a bag that we can all dip into and explore in more depth over the coming decades to ensure we continue to provide all the animals that grace our presence with the very best of care and

understanding.

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- i William James and the modern neurobiology of emotion. A. R. Damasio - Emotion, evolution, and rationality, 2004
 - ii Affective consciousness: Core emotional feelings in animals and humans. Jaak Panksepp in Consciousness and Cognition Volume 14, Issue 1 March 2005, Pages 30-80 Neurobiology of Animal Consciousness
 - iii Affective consciousness: Core emotional feelings in animals and humans. Jaak Panksepp in Consciousness and Cognition Volume 14, Issue 1 March 2005, Pages 30-80 Neurobiology of Animal Consciousness
 - iv Synaptic Self: How Our Brains Become Who We Are. Joseph LeDoux Penguin Books 2003
 - v The Brain That Changes Itself. Stories of Personal Triumph from the Frontiers of Brain Science Norman Doidge, MD, James H. Silberman Books, 2005
 - vi Affective Neuroscience, Jaak Panksepp, Oxford University Press 1998
 - vii Those interested in learning more about this subject may like to explore some of the recommended books in the list below
 - viii How To Make Animals Happy, Temple Grandin & Catherine Johnson ,2009
 - ix You Can Heal Your Life, Louise Hay, Hay House Publishing 1990
 - x Pers coms Bob Bailey June, 1996
 - xi Affective consciousness: Core emotional feelings in animals and humans. Jaak Panksepp in Consciousness and Cognition Volume 14, Issue 1 March 2005, Pages 30-80 Neurobiology of Animal Consciousness
 - xii The Feeling of What Happens: Body and Emotion in the Making of Consciousness A. R. Damasio, Hardcourt Books, 1999
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 - xvi The Language of Dogs DVD set, Sarah Kalnajs, Blue Dog Training 2006
 - xvii The Science of Meditation, TIME Magazine Vol. 162 No. 5 US edition
 - xviii Controlling People: How to Recognize, Understand, and Deal with People Who Try to Control You Patricia Evans, Adams Media Corporation, 2002
 - xix Pers coms John Lane September 2010
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 - xxvi The Selfish Brain: Learning from Addiction, Robert L Dupont, Hazeldon Publishing 2000