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BP - Emotional Mammalian Animal Brain/Limbic System

(Back Page links all will be active by Oct 5)

Our brain is really three separate structures that each evolved over millions of years: reptilian, mammalian and neocortex. The mammalian is also called the limbic system, the animal brain, mid brain and emotional brain. As with all "centers" of the brain for this or that, having a specialized function does not mean other areas are not involved or couldn't compensate to certain degrees.

Paul MacLean's NIH work on the Triune Brain dovetails perfectly with the findings of **Candace Pert** former NIH Chief of brain biochemistry, legendary physicist **David Bohm's explicate, implicate and super-implicate orders,** and with Nobel neuroscientist **Roger Sperry's research**. And many, many more. It is a coherent, internally consistent, and scientifically validated theory.

There might always be detractors for all things challenging conventional thinking. We can assure you, when it comes to what we present here none have yet provided any evidence of specific fault in research or flaw in logic that holds up under scrutiny. We vet very carefully. We welcome anyone to present their evidence and be willing to look at a point by point examination of both evidence and logic. And if we need to be updated or corrected we want to know. We can be very Socratic in our method to drill down to underlying assumptions to expose lack of substantiation if such is the case.

When it comes to understanding our emotions and the emotional/animal brain, there is much that conventional science has over-looked and misunderstood (including **animal intelligence**). To clarify, emotion "happens" in and influences many areas of the brain. That doesn't mean emotion doesn't have a primary base of operation so to speak.

Joe Dispenza: *"The mid-brain is a chemical factory, regulating a huge number of internal processes such as digestion, blood pressure, hormones, etc. It's easy to see how emotional states can impact blood pressure and digestion, and hormones can influence emotions when since they are both regulated from the same part of the brain. This brain oversees what are known as the sympathetic and parasympathetic nervous systems.*

The mammalian brain is largely responsible for our emotions. This is why mammals care for the young (who incidentally can't fend for themselves for some time), while newly born reptiles which hatch fully self sufficient run off to avoid being eaten by mum."

It makes sense that with the evolution of the mammalian or animal brain from the reptilian, capacity for relationship took a **quantum leap** once emotion had a brain structure equipped to process it. Emotion=

capacity for relationship…for seeing and feeling the connection between things…the big picture, transcending the limited 3D view of separate, material, parts and pieces.

If we were operating out of our reptilian brain we'd see only shades of black and white, no depth; concerned with physical survival. The mammalian/emotional brain of relationship and feeling adds color and depth perception. Emotion literally colors our world.

It is logical that earlier brain structures would be laying the foundation for subsequent structures, and that healthy development of a foundational structure will best support healthy functioning of later structures. By definition, the limbic system/animal/mammalian/emotional brain came first and is primary, because the neocortex functions came way later.

In addition to the suggestion that networking throughout the brain means there are no brain centers for emotion, here is another challenge to the Triune Brain theory:

"In my view, the single most harmful aspect of the triune brain concept is that it casts emotion as more primitive than reason, and suggests that human advancement has depending on promoting reason and demoting emotion. I don't agree with that idea at all: I agree with Antonio Damasio, who has spend much of his career arguing that all decision-making requires emotion, and that the idea of making decisions without emotion is misguided." Bill Skaggs, Ph.D. in neuroscience

Emotion is a substrate of intelligence, an underlying foundation, for the "reasoning brain," which is so much more but **we have in fact promoted left hemisphere specialties and ignored the right. The right hemisphere is significantly more tied to the emotional brain/limbic system. Isn't it logical to assume that there is a special relationship between the emotional brain and the imaginative, intuitive, creative, transcendent faculties?**

Unfortunately despite Dr. Skaggs' protestation, we have indeed demoted intuition, transcendent perception, and emotion and there is no solid evidence to think otherwise…with math, science and verbal skills (all L hem) dominating the education landscape.

"The intuitive mind is a sacred gift & the rational mind is faithful servant. We have created a society that honors the servant and has forgotten the gift." **Einstein**

Dr. Jill Bolte Taylor is a Harvard-trained and published neuroanatomist who experienced a severe hemorrhage in the left hemisphere of her brain in 1996. It took eight years for Dr. Jill to completely recover all of her physical function and thinking ability:

*"**Our academic system is designed to reward extreme left-hemisphere gifts and behavior. If you look at our level of aggression in society, it tells us what is going on in the left hemisphere**. It gets stressed out; it is on a timetable, so it's always urgent and always late and behind, and this results in a snappish attitude and behavior. To the left hemisphere, everything is either right or wrong; It is all about hierarchy, so I know where I sit on that ladder."*

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"Until recently, the abilities that led to success in school, work, and business were characteristic of the left hemisphere. They were the sorts of linear, logical, analytical talents measured by SATs and deployed by CPAs. Today, those capabilities are still necessary. But they're no longer sufficient. In a world upended by outsourcing, deluged with data, and choked with choices, the abilities that matter most are now closer in spirit to the specialties of the right hemisphere - artistry, empathy, seeing the big picture, and pursuing the transcendent." - By **Daniel H. Pink former editor, Yale Law Review** and aide to Labor Secretary Robert Reich, best-selling author – initially of business books and more recently *Whole New Mind*, and ***Drive*** **(the surprising truth about what motivates us…it has to do with transcendent meaning).**

Fact: the right hemisphere is significantly more tied to the emotional brain than the left. Why would that be if there is no essential difference between the hemispheres? Einstein had a very strong connection (corpus callosum) between his left and right hemispheres, and famously stated "*Imagination is more important than knowledge.*"

Imagination and other right hemisphere functions are more informed and infused by emotion than left hemisphere functions (more cold and calculating) but that does not mean that emotions aren't very active in a dimension that underlies and interacts with all brain processes. But if we do not understand our emotions, if we are not aware of our emotions and how they color our personal perception and reality, and if we receive no help to healthfully process, integrate, and move past difficult emotions when we are young (instead diagnose "behavior problems"), then they will unconsciously influence our meaning-assigning and decision-making capacities (which in turn reinforce old emotions). **Our conventional emphasis on rational thinking has not given us an effective model for healthy mental and emotional development**. **Sobering Statistics**

As Jill Bolte Taylor pointed out in her quote above, it's not just either/or. The quantum paradigm is about complementarity…both/and.

This is important to clarify: emotions operate everywhere all the time in the brain and the body…they are part of an information network instantaneously and non-locally connected. It's the quantum physics of biochemistry and **Candace Pert**. That doesn't mean there isn't also an "information processing" center so to speak.

The amygdala evaluates all experience or stimuli as basically safe or unsafe depending on past experience and wiring. Then we experience in our body the flow of chemicals and resulting sensations, and that we interpret in our own way and add our own meanings (usually all unconsciously), resulting in what we call emotion (happy, mad, etc).

Dispenza: *"Emotional life is largely housed in the limbic system, and it has a great deal to do with the formation of memories."*

It turns out that indeed emotions as an underlying dimension are critically important for learning.

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Education.com Student Emotions, by Reinhard Pekrun

IMPORTANCE OF STUDENT EMOTIONS FOR ACADEMIC LEARNING AND PERFORMANCE

"Two lines of evidence suggest that students' emotions profoundly affect their learning and performance. The first line of evidence originates in experimental mood research, the second in situated field studies directly analyzing students' emotions. Experimental mood research has shown that mood and emotions facilitate mood-congruent memory processes, such that positive self-related information is more easily stored and retrieved when in a positive mood and negative information when in a negative mood (e.g., Olafson & Ferraro, 2001). By implication, a positive mood can enhance students' motivation to approach learning tasks, whereas a negative mood can trigger mood-congruent avoidance motivation. Furthermore, the findings indicate that positive versus negative mood can promote different styles of information processing. Whereas ***creative, flexible, and holistic ways of thinking are facilitated by a positive mood, more analytical, rigid, and detailed ways of processing of information can be enhanced by a negative mood (Lewis & Haviland-Jones, 2000)."***

How Emotions Affect Learning *Robert Sylwester*

New developments in cognitive science are unraveling the mysteries of emotions; the findings have much to teach us about how students do—or do not—learn.

"John Dewey began this century with an eloquent plea for the education of the whole child. If we get around to that kind of education by the end of the century, emotion research may well provide the catalyst we need.
Our profession pays lip service to the whole student, but school activities tend to focus on measurable rational qualities. We measure spelling accuracy, not emotional well-being. And when the budget gets tight, we cut curricular areas like the arts, expressive subjects that are difficult to measure.
We know emotion is important in education—it drives attention, which in turn drives learning and memory. But because we don't fully understand our emotional system, we don't know exactly how to regulate it in school, beyond defining too much or too little emotion as misbehavior."

The mammalian animal emotional brain may have much more to do with intelligence, learning, and relating than the current models of intellectual development indicate.

We may have a lot to learn from animals about emotional intelligence and the emotional brain we share with them.

http://www.wimp.com/maggiesmartest/

http://www.maniacworld.com/which-is-the-guilty-dog.html

SPEAKERS ON!!! I LOVE how she knows when to put out her paw for him to twirl her!!!
http://sorisomail.com/email/74298/como-se-danca-o-merengue.html

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You won't think of elephants the same way:
http://www.youtube.com/watch?v=jzvCkvnaKJY&feature=related

Click here: Orangutan and the Hound

Here we see that love is not exclusive to humans..... it is inbuilt into beings.
http://www.youtube.com/ watch?v=cu_7jaJV2DE

From Alex and Me, by Irene Pepperberg, PhD (about her decades of phenomenal work with an African grey parrot named Alex. He blew away the basic conventional scientific assumptions about animal intelligence):

"When Alex died, ABC, CBS, CNN, All Things Considered, New York Times ran 3 articles, The Economist, the British newspaper The Guardian, the Australian Broadcasting Corp's radio Science Show, and the journal Nature were just a few of the media that covered the story because of the profound significance of what Alex demonstrated.

To some what he did seemed magical, or at least otherworldly. Indeed, he had given us a glimpse of another world, one that had always existed but remained beyond our view [i.e. "unseen"]: the world of animal minds...

Scientifically speaking, the single greatest lesson Alex taught me, taught all of us, is that animal minds are a great deal more like human minds than the vast majority of [conventional] behavioral scientists believed - or more importantly, were even prepared to concede might be remotely possible...

Eventually, these defenders conceded that...certain cherished cognitive abilities could indeed be found in nonhuman animals, but only in large-brained mammals, particularly in apes. By doing the things he did, Alex taught us that this, too, was untrue. *A non-primate, nonmammal creature with a walnut-sized brain could learn elements of communication at least as well as chimps...revealing sophisticated information processing - thinking."* http://www.wimp.com/alexparrot/ **MORE**

MORE:

From the book *Alex and Me* by Irene Pepperberg, PhD:

"…Alex did indeed know what he was saying. A simple example: if Alex said, 'want grape' and you gave him a banana, he'd spit it right back at you and repeat insistently, 'Want grape.' He wouldn't stop until you gave him a grape. If you were dealing with a child, you would accept without question that he or she wanted a grape and a banana simply wouldn't do.

"Tests involved putting various of his toys on a green tray and asking questions such as 'What object is green?' 'What matter is blue and 3-corner?' 'What shape is purple?' 'How many 4-corner wood?' At first Alex answered correctly most of the time: 'key' or 'wood' or 'wool' or 'three', etc. But before too long, he started to act up. He would say 'green' and then pull at the green felt lining of the tray, hard enough that all the objects would fall off. Or he would say 'tray' and bite the tray. Sometimes he'd say nothing and suddenly start preening. Or he'd turn around and lift his butt in my direction, a gesture too obvious to need translation.

Sometimes, however, Alex chose to display his opinion of the boring task at hand by playing with our heads. For instance, we would ask him, 'What color key?' and he would give every color in his repertoire, skipping only the correct color. Eventually he became quite ingenious with this game, having more fun getting us agitated rather than giving us the answers we wanted, because it was statistically near to impossible that he could list all but the correct answer.

The concept of 'same/different' is fairly sophisticated cognitively. We trained Alex to use color and shape as categories with which to determine same or different. When presented with a pair of objects, such as green 4-corner wood, Alex's correct response to 'What's same?' and 'What's different?' would be 'shape' and 'color,' respectively, not the specific color or shape [which were his correct responses to earlier sets of questions/tests]. To answer the question correctly, Alex would have to take note of the various attributes of the two objects, understand exactly what I was asking him to compare, make that judgment, and then tell me the answer.

Because many of the objects we used were familiar, boredom [with repetition] again became an issue. We tried to keep his interest by interspersing 'same/different' tests with teaching him new numbers, new labels, and other novel tasks. He got the right answer – 'shape' or 'color' 75% of the time. (We also included a new category, 'matter' or material). When we gave him pairs of objects that were novel to him, colors he could no label, for instance, he was right 85% of the time, which is actually a better measure of his ability. The novelty obviously held his attention better.

Now when David Premack had tested chimps on this kind of test, all the animals had to do was indicate whether two objects were the same or different. Alex went a step further in our tests. He was able to tell me exactly what was the same or different: color, shape, or material. When I reported our results at the International Primatological Congress in Gottingen, Germany in 1986, a senior professor lumbered to his feet and said, 'You mean your parrot can do what Premack's chimps can do, only in a more sophisticate manner?' I said, 'Yes, that's right,"…He simply said 'Oh' and sat down."

In another series of tests, Alex "figured out for himself that the Arabic numeral six represents six somethings, the numeral five, five somethings, and so on down the number string. Chimpanzees cannot do this without extensive training."

"We were training Alex to sound out phonemes, but not because we wanted him to read as humans do. Instead we wanted to see if he understood that his labels were made up of sounds that can be

combined in different ways to make new labels. We knew that he sometimes babbled when alone, producing such strings as 'green, cheen, bean, keen,' and so on. This suggested that he did indeed understand that labels are made up of subunits that can be used in different ways. But as always, we needed scientific proof.

We taught him the sounds of different letters or letter combinations using big refrigerator letters of different colors. He had become quite proficient. We had a short amount of time for the demo and the sponsors were very keen to see him do his stuff.

'Alex, what sound is blue?' He answered, 'Sss'. It was an S so I said "good birdie.' He replied "Want a nut.' Because we were pressed for time, I didn't want to waste it with Alex eating nuts. I told him he had to wait and asked 'What sound is green?' Alex answered 'SSShh.'

Again he was right. And again I said 'Good parrot.'

And again Alex said 'Want a nut.'

'Alex, wait,' I said. 'What color is 'or'?'

'Orange.'

'Good bird!'

'Want a NUT." Alex was obviously getting more than a little frustrated. He got very slitty-eyed, always a sign he was up to something. He looked at me and said slowly, 'Want a nut. Nnn…uh…tuh.'

I was stunned. It was if he were saying, 'Hey stupid, do I have to spell it out for you?' More importantly, he had leaped over where we were with his training, which was individual phonemes, and gone on to sound out the parts of a complete word for us."

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