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THE TRIUNE BRAIN, ESCALATION DE-ESCALATION STRATEGIES, AND MOOD DISORDERS

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INTRODUCTION

Paul MacLean described three “central processing assemblies” in the neomammalian, paleomammalian, and reptilian brains that make decisions about responses to environmental social events relatively independently. In this chapter, I apply this model to explaining the two alternative strategies of escalation (fight) and de-escalation (escape or submission). At the neomammalian level there is a conscious, rational decision either to fight or give in. At the paleomammalian level which relates to emotions and the limbic system, there is deployment of either the escalatory emotions of anger, exhilaration, and so on, or of the de-escalation emotions of fear, depression, shame, etc. I suggest that at the reptilian level of the forebrain, the escalating strategy consists of elevated mood and the de-escalating strategy consists of depressed mood, which is unfocused or self-focused. In some cases the responses of the levels may be incompatible. The implications for mood disorders and their treatment are examined.

BACKGROUND

The message I got from the work of Paul MacLean entailed the following: the mammalian forebrain has evolved into three “central processing assemblies” for coordination of information and decision-making about how to respond to changes in the environment.¹ These three assemblies coordinate their actions but make somewhat independent decisions. For ease of communication I talk about the rational brain situated roughly in the neocortex (MacLean’s neomammalian brain), an emotional brain in the limbic system (MacLean’s paleomammalian brain), and an instinctive brain situated in the corpus striatum (MacLean’s

reptilian brain or R-complex). The rational brain uses all the information that we normally consider conscious, and its decisions have the character of voluntariness with full awareness. The emotional brain has restricted access to the information of consciousness; its decisions have both voluntary and involuntary components, with only partial awareness of its decisions; the information used in emotional brain decision-making includes elements unavailable to the rational brain, as Pascal noted in his famous aphorism "Le coeur a ses raisons que la raison ne connaît pas" (The heart has its reasons which are not known to Reason). The instinctive brain has different sources of information that have not been much studied yet; its decisions are involuntary with no awareness of any ensuing course of action until that action takes place.

This new conception of the forebrain replaced my previous idea, that of homogeneous brain expansion since the time of the common human and reptilian ancestor some 250 million years ago, and included the general principle that higher centres control the lower ones, largely through inhibition.

The numerous theories of unconscious processes attest to psychiatry's inevitable concern with brain or mind levels.² When treating patients with depression and anxiety, the clinician finds it obvious that higher centres do not control the lower ones. No patient with his rational brain can command his emotional brain to feel less depressed or anxious. From the time of Coue and Samuel Smiles to the more recent efforts of psychological healers, people have stood before their mirrors and repeated to themselves such phrases as, "Every day, in every way, I am getting better and better." But these techniques do not work. In fact, they make patients worse, because they arouse expectations of improvement that remain unfulfilled, therefore resulting in disappointment and a sense of failure. An outstanding feature of psychiatric practice hinges on the fact that the rational brain of homo sapiens, the acme of the evolutionary process, has no more control over the lower brain centres than does the rider over a runaway horse.

Rational control over the lower brains could easily have evolved. The fact that it has not should tell us something—namely, that painful and incapacitating processes such as depression which emerge so much against our conscious will are, in fact, performing one or more functions of adaptive value. It appears that the rider does not always know best. There is survival value in having a horse that sometimes makes the decisions.

WHAT NORMAL BEHAVIOR UNDERLIES MOOD CHANGE?

In an evolutionary analysis of psychopathology, we must determine what kind of behaviour is being affected. A depression may or may not be adaptive, but it likely, at least, exaggerates or distorts some piece of adaptive behaviour. In the case of mood disorders, no general agreement exists on what this normal adaptive behaviour might be; except, perhaps, that it involves some form of social behaviour. The extreme incapacity of depression can only be maladaptive for nonsocial events. Generally, we agree that when depression has a cause, it

involves some form of loss or failure. But if, for example, in a group of our hunter/gatherer ancestors, hunting had gone badly, it would not be adaptive for the hunters to become so depressed that they were unable to gather effectively. As with foraging decisions, so with predator avoidance, there is little place for depressed mood. Only in the case of dealing with climatic adversity do we get a suggestion that depression might perform some function analogous to hibernation during the winter, and keep us out of harm's way until spring comes along. But, in spite of the attention devoted recently to seasonal affective disorder (SAD), psychiatry is not a seasonal matter, and there is no suggestion that we might close our consulting rooms during the summer and take jobs as water-ski instructors.

Social theories of the adaptive value of depression take the form of cries for help, changes of social niche, relinquishing of unattainable social goals, and adjustment to loss. At the time I first became engaged with this field, it was thought that depression served some function in relation to loss, separation or bereavement. This reasoning never convinced me. Although it was clear that a social or romantic bond of many years' duration could not be broken without some grief, it never seemed likely that a depressive episode of several months' duration could be adaptive following the loss of a good ally or partner. Depression is incapacitating, and if you lose a partner, there is the work of the partner to do in addition to your own, so that an increase in capacity would be more advantageous than depression.

SOCIAL COMPETITION

More likely has been the possibility that elevation and depression of mood serve a function in relation to social competition. The reasons for this are as follows:

Depressed patients feel like failures and losers.³

Manic patients feel successful and like winners.⁴

The basic strategy set of social competition contains the two alternative strategies of escalation (fight) and de-escalation (flight or submission), which have similarities to elevated and depressed mood, respectively.⁵

Competing animals can switch rapidly from escalation to de-escalation in the way that a manic-depressive patient can switch from mania to depression.

Monkeys who have failed in social competition and thus are low ranking may behave in a restricted and dysphoric manner similar to that of depressed patients.⁶

However, there are problems with this line of thinking:

Some high-ranking people are depressed.

Some low-ranking people are perfectly happy.

Some depressed patients are very powerful—they may be stubborn, demanding and manipulative. Aaron Beck warned, “Beware of locking horns with a depressed patient, or you may be pushed clean out of the consulting room!” Depressed patients do not act in a submissive way or show deference to more powerful people.

In our discussions of these matters, we played with ideas of there being two different types of submission, voluntary and involuntary, and that depression reflected only involuntary submission—so that an alternative to depression could be those forms of voluntary submission that go under the terms of humility, reasonableness, and willingness to compromise. But the water was murky, and we could not see the way ahead clearly.

THE TRIUNE MIND/BRAIN

Then came triune brain theory. Although it would be too much to say that all then was light, it did clarify our ideas greatly. One could say that we passed the white light of escalation/de-escalation theory through the prism of triune brain theory and saw the resolution of clearly identifiable patterns of behaviour at each level of the triune brain (see Table 6.1 next page).

In response to social adversity, or ranking stress as we called it, each level of the triune brain seemed to make a decision between escalation and de-escalation. Sometimes the decisions agreed. Then there was likely to be a quick resolution of the conflict through either defeat, acceptance of defeat, and reconciliation on the one hand, or success, acceptance of the other’s submission, and reconciliation on the other. At other times the decisions did not agree, and then trouble ensued, leading to psychopathology.

We have been concerned at the amount of criticism MacLean has received from his fellow neuroanatomists, but we note that these criticisms have been over details, and have not challenged the essential concept of three relatively independent central processing assemblies; in fact, in their authoritative monograph on the evolution of the vertebrate nervous system, Butler and Hodos state: “Longitudinal transmission of information within the nervous system and the presence of rostrocaudally localised areas of integration and control are keystones of the chordate nervous system.”^{7, p 465}

The most efficient way to bring about conflict resolution operates at the rational level. One of two competitors should be able to say, “The other guy is more powerful, so I will give in.” The lower agonistic strategy sets can be left alone and this could be called functional agonism. But, unfortunately, the human animal often prefers to not give in. On the way to my present location, I passed a T-shirt with the caption, “Never surrender,” and this sums up a slogan which has been reiterated over the centuries ever since the Titans were thrown out of Heaven.

Table 6.1. The Social Competition Strategy Set at Three Levels of the Triune Brain/Mind

	<u>Escalation</u>	<u>De-escalation</u>
Rational/ Neocortical	Formation of goals Proclamation of goals Overcoming of opposition Social participation Self-assertion Decision to fight on	Giving up of personal goals Adoption of others' goals Submission Acceptance Resignation Self-effacement
Emotional/ limbic	Joy, rapture Enthusiasm Oceanic feeling Anger Indignation	Boredom Apathy Shame Guilt Depressed emotion
Instinctive/ Reptilian	Increase of RHP/SAHP Increase of resource value Increase of "ownership" value Increase of energy Elevated mood (IDS)	Loss of RHP/ SAHP Loss of resource value Loss of "ownership value" Loss of energy Depressed mood (ISS)

Another form of functional agonism works as follows: The rational brain decides to fight, but the emotional and/or instinctive brains decide to de-escalate. These de-escalations affect the thinking of the rational brain, moving it in a more pessimistic direction. To put it technically, there is a loss of resource-holding potential (RHP), resource value and "ownership," so that the individual feels less confident of winning, sees the prize as less valuable, and feels less entitled to the ownership of the prize.⁸ Due to this more pessimistic thinking, the rational level switches its strategy from escalation to de-escalation, there is graceful losing, with the way paved for reconciliation. In this process, the lower brain controlled the upper brain. And this seems to be its function. The upper brain seems designed for escalation, to win at all costs, and not to jeopardise its fighting efficiency by any thought of possible damage or defeat. This monitoring of possible defeat has been relegated to, or retained by, the lower brain. In some way the lower brain seems to keep a tally of punishment received, and when this gets too great it exerts its authority telling the upper brain to de-escalate. The upper brain, which was in any case having a fairly difficult encounter, now has the added handicap of depressive incapacity. So, if it does not capitulate gracefully at this stage, the individual likely gets carried out of the arena on a stretcher.

We have identified depression with instinctive de-escalation, and the commonest cause of prolonged instinctive de-escalation appears to be continued inappropriate rational escalation, or, to put it another way, blocked rational de-

escalation. There are many causes for this, and I will defer discussion of them to a later section.

Prolonged instinctive de-escalation may also stem from inappropriate emotional escalation. An example entails the parents whose child has been killed by a drunken hit-and-run driver. The parents know there is nothing they can do at the rational level, but there is often sustained anger that cannot be satisfied or usefully discharged. The continued "punishment" and hurt accesses the instinctive agonistic strategy set and if de-escalation is selected, chronic depression ensues that cannot be resolved because continued emotional escalation persists.

The third clinical variety is emotional de-escalation associated with rational escalation. This describes, characteristically, wives consulting for marriage guidance.⁸ They experience emotional distress, weep, and otherwise de-escalate emotionally. But at the rational level they have escalated in that they are determined to change their husbands' behaviour; to make him less spendthrift, or less unfaithful, or just to pay them more attention. Their failure to achieve this change for the better in the husbands took them to marriage guidance. But the husbands typically sit in the session stony-faced, turned away from their weeping wives, apparently unmoved by their distress. They do not want to change, but they feel confused by their wives' behaviour, escalated at one level and de-escalated at the other.

In a fourth clinical variety the patient de-escalates at all levels, but the submission is not being accepted by the important other person. This occurs sometimes from ignorance, sometimes from cruelty. The fifth and final example of dysfunctional agonism is seen when the instinctive strategy set is too easily accessed, and de-escalation occurs inappropriately to the situation. These patients are oversensitive, too easily moved to tears. Sloman's chapter in this volume deals with them extensively.

TREATMENT

The treatment that arises from our model can be listed in four stages with the injunction: Try the first stage first, and if that doesn't work, try the second stage, and so on.

1. Find a rational solution. There is nothing wonderful about the operation of the lower levels, and their mobilisation of emotional distress and depressed mood suggest failsafe mechanisms because the higher-level has failed to solve the problem.

The therapist's task involves:

(a) identifying the conflict.

(b) estimating the chances of winning, or of leaving the arena, or of submitting the conflict to arbitration; and if any of these seem possible, helping the patient achieve them.

(c) if the problem is one of blocked voluntary yielding (inappropriate rational-level escalation), devising a means for the patient to give in (or give up) without loss of face. This best happens before the administration of antidepressant drugs, because the “giving-up” component of the depressive cognitions may help. In fact, when this situation arises, this giving-up depressive cognition typically has not been strong enough to achieve the necessary yielding. It needs the depression plus the therapist to complete the job.

(d) if a third party is causative, dealing with the problem. Such a third party may be demanding obedience that conflicts with obedience to another, therefore preventing the patient from making a desired submission. This occurs commonly in patients caught between the demands of a dominant parent and a dominant spouse. They cannot submit to both at the same time, because the demands are incompatible. Or the third party may not accept the submission, perhaps because he or she fails to recognise what is going on.

(e) if the patient’s instinctive agonistic strategy set is too easily accessed, perhaps due to “kindling” by physical or emotional abuse in childhood, setting in motion appropriate measures. These may range from long-term individual psychotherapy to a self-assertion class. (See Sloman, this volume.)

(f) if the patient has had to give up some unattainable goal or much-loved incentive, considering the need for “bereavement counselling” of some sort. Rosen⁹ discusses this well.

2. Reframing the situation. If the situation that gave rise to the depression seems insoluble, consider how it may seem differently to the patient. Here the rational brain tries to control the informational input to the emotional brain. Since it cannot influence the emotional brain directly, this represents the closest approximation to influencing the decision-making function at the emotional level. The best reframing process in the Western world is Christianity. Reframed pain and suffering take on Christ-like qualities: the more one suffers, the more one shares the experience of the Saviour. Gurdjieff reframed suffering to his disciples as opportunities to work on the self and so improve the “true self” which, given enough opportunity and enough work, might become immortal.¹⁰ The classical reframing, quoted by Watzlawick,¹¹ is Tom Sawyer’s punishment of having to paint a fence. This prevented him from going fishing with his friends, so Tom reframed it as a marvellous opportunity to have fun with paint. This reframing gained such success that his friends forgot all about fishing and begged him to let them do the job themselves. For the parent of a child killed by a hit-and-run driver, it may help to see the driver as someone sick rather than bad, perhaps as someone in the throes of epilepsy or a heart attack.

3. Substitute group conflict for individual conflict. We have suggested that the tendency to depressive illness evolved as part of the yielding component of ritual agonistic behaviour. Essentially this stems from a dyadic interaction. The same considerations do not apply to conflict between groups because group conflict lacks the primitive ritual quality of dyadic encounters. In other words, when groups lose a conflict, the members may become demoralised, but they do not become depressed in the way that individual losers do. Therefore, if the patient can join other people engaged in the same conflict, the whole operation may switch from individual agonistic behaviour to an intergroup process. The parents who lost their child to the hit-and-run driver can join other parents and express their grief and rage in a group fashion, and hopefully thereby direct their energies into such positive action as campaigning for more severe laws on drunk driving.

4. Last, provide salves and ointments to the symptoms themselves. This should represent very much a last-ditch action. One hopes that in most cases one of the preceding three methods would have worked. If not, the symptoms may be addressed directly. I am indebted to Leon Sloman for the vignette of the alpine climber who has a panic attack on the side of a snow-covered mountain. He heard a rumble and feared an avalanche. His breathing accelerated by anxiety caused him to blow off too much carbon dioxide, his blood became alkaline, and his muscles went into tetany. In this case, encouraging him to breathe more slowly results in restoration of the acid-base balance of his blood to normal so his legs move again and he can walk to safety. Of course, even here, common sense must be used. The therapist chose the breathing. He would have had less success if he had applied ointment to the tetanic muscles.

In this case, we accept that higher level solutions were not available. The therapist might have done better to produce a cell phone and summon up a helicopter to take the patient off the mountain to safety. Or reframing the situation, he could have pointed out that they were not in fact on a real mountain at all—they were actors taking part in an alpine movie, and the rumbling he had heard was the movement of a mock Mont Blanc on its castors to take up a new location. However, we accept that the *deus ex machina* of a helicopter is seldom to be summoned, even with a cell phone, and that most climbers who panic at the thought of an avalanche are on real mountains and not taking part in films. But this direct attack on symptoms represents a last resort, unlike some cognitive behaviour therapists who spend time trying to argue patients out of their depressive delusions.

RESEARCH

Like other evolutionary interpretations, the foregoing represents speculation in the last resort untestable. But definitive implications for treatment result. These might have been deduced from another theory, but they have not. Treatment either works or it does not; and this can be tested in a controlled trial. The following plan would constitute such a test: (1) recruiting a center already

conducting manualized psychotherapy of depression, e.g., interpersonal therapy or IPT;¹² (2) inserting into their research design additional or replacement interventions based on the evolutionary theory as delineated above. We predict that the results would show quicker and greater power.

THE TRIUNE MIND

For centuries, thinkers have expressed intimations that the mind functions in a way dictated by the triune nature of the brain. Plato, in a chapter entitled “The three parts of the soul” describes various functions and asks: “Are we using the same part of ourselves in all these three experiences, or a different part in each? Do we gain knowledge with one part, feel anger with another, and with yet a third desire the pleasures of food, sex, and so on? Or is the whole soul at work in every impulse and in all these forms of behaviour?”¹³, p. 132

Eastern philosophy, brought to the West after World War I by Gurdjieff,¹⁰ used the metaphor of the horse and cart to describe the mind. It talked of a driver, a horse and a cart, and of the connections between the three elements. The driver represents the rational mind, the horse the emotional mind, and the cart the instinctive mind. This philosophy aimed to create a fourth element, the “true self” representing a “master,” who controlled the driver, and told him where to go. Gurdjieff established a teaching centre near Paris; its prospectus proclaimed:

a modern man represents three different men in a single individual—the first of whom thinks in complete isolation from the other parts, the second merely feels, and the third acts only automatically, according to established or accidental reflexes of his organic functions . . . they not only never help each other, but are, on the contrary, automatically compelled to frustrate the plans and intentions of each other; moreover, each of them, by dominating the other in moments of intensive action, appears to be the master of the situation, in this way falsely assuming the responsibility of the real “I.”¹⁴, p. 138

CONCLUSION

In summary, the concept of the triune mind has been part of human folk knowledge for over two millennia. Paul MacLean’s description more recently provided a neuroanatomical basis for this knowledge, offering an enormous boost to the heuristic value of the triune model. In this chapter and elsewhere¹⁵ I attempted to demonstrate some applications to psychiatric practice; and in the future I would anticipate that it will have a profound influence on the fields of individual and social psychology.

It is, of course, just a theory, that should be compared with other theories dealing with the same material. Birtchnell, for example, has put forward a two level theory^{16,17} that may have advantages in certain circumstances; sometimes it is useful to contrast the rational brain with the remainder of the brain.¹⁸ However, the three-level theory has the advantage of dealing with the emotions

separately. For instance, it clarifies the relation between depressed emotion and depressed mood (the former focused on an object rapidly responds to changes in the object's situation, in contrast to depressed mood that remains unfocused or self-focused, and unresponsive to circumstances present). The present theory challenges previous theories of emotion, which, for instance, combine anger and depressed emotion in the same category of negative emotion in contrast to the positive emotions of joy and happiness. According to triune mind/brain theory, anger joins with joy as an escalating emotion, in contrast to depressed emotion seen as a component of a de-escalating strategy. Empirical research will decide which theory most usefully conceptualizes the data.

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