ADVANCES IN INTERPERSONAL APPROACHES

The Interactional Nature of Depression

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SOCIOPHYSIOLOGY AND DEPRESSION

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SOCIOPHYSIOLOGY

Psychiatry and related clinical sciences lack a basic science of the type that underlies other medical specialties (Gardner, 1997). Such a framework would allow an understanding of the conditions treated by clinicians as variations of normal physiological and biochemical operations just as congestive heart failure is understood in terms of a pathogenetic story concerning the cardiovascular system (heart muscle falters causing blood flow backup). Knowledge of the normal cardiovascular system and its operations informs treatment of this mechanism pharmacologically (digitalis preparations) and by counsel (bed rest and low-salt diet). In parallel, we propose that knowledge of normal systems and their operations would inform the treatment and counseling of depression. In this chapter, we hope to formulate this framework with respect to the normal communicative processes basic to depression and to describe how the condition is a variant of normal sociophysiological operations. We suggest that this framework will provide guidance for the best counsel and pharmacological treatment of this serious malady, which is diagnosed more than any other psychiatric condition.

Sociophysiological theory assumes that psychiatric disorders are path-

ological variants of the motivation, emotions, and conflict involved in normal communicational processes. Interpersonal processes thereby are functions of the brain's normal operation; when they transpire aberrantly, pathology may result (Gardner, 1996). Correction may result after amelioration from interpersonal means. People who panic frequently become calm when someone else is around. Reaction patterns seem to have evolved to serve adaptive purposes, but they may be wrongly deployed by threshold effects, environmental circumstances, timing, and other factors. Dunbar (1996) noted that people are highly social and that this tendency correlates with the enlarged size of the human brain. Therefore, fear responses—an ancient form of reaction pattern—may persist, but more recently evolved features unique to humans modulate them. The point is that across-species comparisons in behavioral, genomic, and neural mechanisms are part of a sociophysiological approach, but contrasts are an equally integral component. Another human means of reducing fear stems from the use of medication. The role of medical doctor, with the availability of scientifically based drugs, is unique to the human species.

The eventual complete description of the pathological sociophysiology of depression will entail detailed expositions of how neurotransmitters and cell and brain systems operate in the normal states and aberrantly when pathological; we are concerned in this chapter with postulated brain modules that mediate individual motives and group effects, only touching on other levels of analysis. A basic tenet of sociophysiology holds psychopathological states to be exaggerations or inappropriate deployments of behavioral modules encoded in the nervous system as normal adaptive features. We propose that a normal module underlying depression and dysthymic disorder is one of *subordination*. One of us has labeled the correlated organismic state *in-group omega psalic*, wherein *psalic* is an acronym for *propensity state antedating language in communication* (Gardner, 1988). This term refers to the communicational state associated with being the lowest ranking animal in a grouping.

INVOLUNTARY SUBORDINATE STRATEGY

The Strategy

At the right time and place, and under the right circumstances, subordination represents a highly adaptive approach to solving problems of survival for oneself and one's offspring. One survives now to compete at a later time under better circumstances. Game theorists label as *strategy* behavioral sequences that imply the possibility of particular outcomes (Maynard Smith, 1982). In the presently described work, the intent to seem defeated represents a strategy. Deployment of such strategies results in

behavioral evidence of particular states, such as depression and mania. With respect to the strategy interpretation of depressed states, we suggest that they represent states of *involuntary* subordination. We return to the involuntary–voluntary distinction in a later section.

Alternative Theory of Attachment Disruption

Depression theorists have traditionally considered depression to represent an organismic state resulting from separation or loss (Bowlby, 1980). Here, we instead consider it to be fundamentally a side effect of the biology of competition of the same kind that determines territoriality and social rank (Gardner, 1982; Price, 1967). It would still be sociophysiological, of course, if further data and hypothesis testing eventually showed the neuronal programs and behavioral modules that mediate separation responses to be more critical than those that subserve subordination.

Separation and social rank hypotheses seem at this time to be opposing hypotheses, but this may represent a false dichotomy similar to that labeled *nature–nurture*. We expect that more information from research will reconcile the two positions. We propose that some biological components evolved before others and may have formed a platform or basic plan on which subsequent developments were erected. That is, attachment behaviors are likely the result of less conserved molecular and cellular processes than are behaviors involving competition and rank; indeed, the permutations of social rank and in-group bonding may show a high degree of interdependence. Whatever the future of these research endeavors holds, the social rank hypothesis has received less scientific attention, and in this chapter we redress that neglect.

Handling Ranking Stress

We have labeled as the *involuntary subordinate strategy* (ISS) the behavioral component of a proposed normal module that underlies depression (Price, Sloman, Gardner, Gilbert, & Rohde, 1994). We invoke the term *involuntary* because the ISS is one of at least two levels of decision-making processes used by the brain to deal with ranking stress (the environmental circumstances that elicit the ISS reaction). The voluntary strategy is a higher order, more recently evolved reaction (on a level similar to that deployed by a patient with a height phobia who has his son drive over a very high bridge).

Ranking stress refers to the organism's need to cope with a conspecific challenge (a member of the same species vying for resources such as territory, status, or mating opportunity). This formulation originally involved fighting capacity as measured by the concept of resource-holding potential (RHP). Such competition exists in nearly all arthropods and vertebrates.

Primates including humans exhibit its workings behaviorally, and so do dung beetles, the species on whose behavior game theory was originally based (Parker, 1974). We hypothesize that like fight-or-flight reactions, ISS represents an ancient strategy, but one remaining functional in intervening species that therefore has not been abandoned.

Is ISS Homologous Among Varied Species?

Does the similarity of beetle and primate aggression represent homology (the attribute is traceable to a common ancestor) or convergent evolution (the attribute evolved to a functional similarity but from different sources)? Molecular correlates of arthropod subordination mechanisms may vary from those of vertebrates similar to the way that mechanisms of flight vary in birds and bats (convergent evolution). It is possible that in vertebrate ancestral species such as cephalochordata, competition among conspecifics dwindled so much that the mechanisms for competition needed to be newly formed from natural selection subsequently. This is uncertain of course; many conserved molecules held in common by arthropods and vertebrates have been discovered (Carroll, 1995), and how these relate to conspecific behavior mechanisms is not yet known. For all vertebrates, however, we conjecture that core mechanisms probably hold, because there has been no discernible lapse in conspecific competition, just as all land vertebrates possess similar locomotory devices (spinal reflexes and arrangements of musculature of the extremities). Spinal mechanisms ancestral to these indeed were pioneered by fish before the lobe-finned ancestors of both land-based vertebrates and present-day fish made their transition to land. MacLean (1990) usefully noted that in vertebrates there have evolved overlapping and emergent neuroanatomical and behavioral stages, which he labeled *reptilian*, *paleomammalian*, and *neomammalian*. The extent to which his conception is true awaits more definitive analysis in the form of the eventual deciphering of neuronal programs or genomic codings for such programs, including extensive use of across-species contrast–comparisons.

Involuntary Decision Making Contrasts With Voluntary Thought and Planning

Subordination at a voluntary level may have evolved in mammalians. A general rule seems to hold that when responses to the same stress can be actuated at two brain levels, the higher, more recently evolved response preempts or terminates the lower level, primitive response. For instance, in response to cold, switching on the central heating may preempt or terminate shivering. In response to bright light, putting on sunglasses may preempt or terminate blinking. Similarly, voluntary subordination may pre-

empt or terminate the involuntary subordinate strategy (ISS), which otherwise might manifest as depression. For this reason, depressed patients may not manifest voluntary subordination (if they did, the ISS would have been terminated). Indeed, depressed patients whose brains are engaged in a subordination behavioral module may appear insubordinate—rebellious, aggressive, and stubborn—which is the reverse of the commonly understood meaning of the term *subordinate*. This distinction between voluntary and involuntary levels of subordination may clarify the complex relations between depression and environmental events.

Comparison to Hibernation

The ISS is hard to recognize because it is composed largely of an *absence* of behavior. The ISS consists of an absence of aggression, place seeking, lobbying for influence, and entry into social arenas "where the action is" (Goffmann, 1969). Like the dog that barked in the night, it is easier to recognize the presence of something than the absence of something. More active, positive elements of subordinate behavior, such as flattery and ingratiation, belong to the category of voluntary subordination, and even these may be inhibited in the ISS (e.g., flattery is more likely to occur in mania than in depression).

ISS may be compared with hibernation, a behavior that occurs in a number of animal species, in an attempt to conceptualize what ISS represents. The ISS is analogous to hibernation in the following respects:

- Both states are characterized by a reduction in active behavior.
- Both occur in response to stress (social adversity and climatic adversity).
- Most of the population has the capacity to perform the behavior given the right circumstances (e.g., the arctic ground squirrel, of which a proportion of the population hibernates every winter).
- In the absence of "the right circumstances," a few individuals manifest the behavior anyway (depression may occur without manifest, environmental cause; squirrels kept in constant climatic conditions may nevertheless hibernate).
- The trigger may be a predictor of the stress rather than the stress itself (shortening day length predicts the onset of winter; loss of an ally or patron predicts ranking stress).
- In both states there seems to be a "hypothalamic functional shift" (Pollitt, 1960).
- Exit from the state happens after a fixed lapse of time (the hibernating animal is not in a state to assess the weather; the

depressed patient is not in a state to make an accurate assessment of the social environment).

If one were to study the pathologies of hibernation, one might expect to identify states in which the body temperature dropped too low, hibernation occurred in the absence of the usual precipitating events, or arousal from hibernation failed to occur in the spring. In parallel, the pathology of depression may represent an intensification, prolongation, or inappropriate occurrence of a normal behavioral module encoded in the nervous system.

Strategy Set

Although the ISS may be simply a reaction or single strategy, another useful hypothesis holds it to be a member of a strategy set. An obvious fellow member of the set is the involuntary dominant strategy (IDS); when the strategy set is accessed, a decision is made between the ISS and the IDS. Patients with bipolar disorder exhibit, of course, both depression and mania. We conjecture that if the IDS is chosen, mania results. One of us has elsewhere discussed a related formulation for mania using a concept similar to the IDS—that the patient assumes an alpha status (psalic) similar to that of leaders (Gardner, 1982). Whether individuals exhibit IDS or ISS may stem in part from appraisal of the environment, including appraisal of a perceived opponent, and in part from the operation of random processes.

When the genomic coding for these strategies evolved, probably before the reptilian stage of 300 million years ago, the strategy set was probably accessed in the context of agonistic behavior, referring to competition among conspecifics. The eliciting stimulus was probably an evenly matched opponent. Pairwise contests of agonistic behavior are easily settled if two adversaries are unevenly matched. Then, the smaller or weaker gives way to the other, and a damaging contest is avoided. In his initial work, for instance, Parker (1974) noted that the larger of two competing dung beetles invariably won.

In the case of equal matching, however, something more is needed, such as an agonistic strategy set. When an individual engaged in a contest perceives itself as being evenly matched, with neither victory nor defeat as likely immediate outcomes, that individual may deploy either the IDS winning strategy or the ISS losing strategy. By pumping more energy and confidence into the system, the IDS may swing an evenly matched encounter into one wherein the IDS-using contestant wins. On the other hand, by draining energy and confidence, deployment of ISS ensures that the user will rapidly lose.

Of course, there is least conflict and damage if both competitors access

the agonistic strategy set at the same time and choose opposite strategies. They then develop complementary roles and are likely to establish a stable but asymmetrical relationship. If they both deploy the IDS at the same time, a serious fight may ensue in which one is likely to be damaged or killed. What if they both deploy the ISS at the same time? Schjelderup-Ebbe (1935) described this situation in barnyard fowl. What usually happens is that one bird recovers from its submissive posture and switches to the IDS.

The choice between IDS and ISS may occur on a randomized basis (compare with the unpredictability of whether a manic or depressive episode will next occur for most bipolar patients; Goodwin & Jamison, 1990). If competitors do not want their rivals to be able to predict their future strategy, unpredictability from randomization may be the surest route of ensuring this. Each individual then has a phenotypic character of p(IDS), which is the probability of deploying the IDS rather than the ISS when the agonistic strategy set is accessed. It does not matter for this purpose whether p(IDS) is genetically, environmentally, or randomly determined. To the extent that it is genetically determined, it is likely to be influenced by the occurrence of negative frequency-dependent selection, as Maynard Smith (1982) showed with his hawk and dove model. Thus, rarer occurrences of the genotype are more likely to enhance fitness. Perhaps the familial inheritance of manic-depressive illness (bipolar disorder) fits such a paradigm and may echo the deployment of an agonistic strategy set. We suspect, however, that the access to the agonistic strategy set is likely a property of any human, not limited to those who inherit a tendency to have mania and depression as inappropriate exacerbations of the deployment of IDS and ISS.

Modern Ranking Stress

Of course, humans are now 300 million years down the evolutionary slope beyond the reptilian stage, and the agonistic strategy set is unlikely to be accessed simply when two contestants are evenly matched. Ranking stress now happens when uncertainty prevails about ranking relationships. This may be uncertainty about rank, some form of bullying by superiors, or threats of insurrection by subordinates. It may occur when there is loss of an ally on whose support one's rank depended. Using different terminology, one can say that ranking stress occurs when people are not able to impose their own definition on a relationship or situation, particularly when someone else imposes a definition that is difficult or unacceptable. Then the two are in a contest about whose definition prevails. This is formally similar to the situation of two reptiles contesting dominance.

In summary, we suggest that an agonistic strategy set is accessed when a person suffers ranking stress. This in turn occurs when one is unable to

be confident about controlling the definition of an important relationship. When such a definition is unclear, one "chooses," perhaps partly by a process of randomization, between the IDS and the ISS. Because the simultaneous choice of the IDS by both contestants leads to damaging fights, the ISS may be the most common strategy for most people. In the rest of this discussion we concentrate on the ISS.

Perception of ISS

Proximate triggers of the agonistic strategy set (and hence simulation of the ISS) entail how the individual becomes aware of ranking stress. Probably there are a number of such proximal triggers. There may be cognitive appreciation of a conflict of wills. There may be a sensation of being put down by the other, either from the receipt of interpersonal signals or from the feeling that one is being manipulated into a one-down position. There may be pain, either mental pain from insults or physical pain from blows. Or there may be the sensation that one is unable to reciprocate the blows of the rival, with the well-known uncomfortable feeling that one's blows are not "getting home" on the rival.

The reciprocation of blows and insults is important for the maintenance of symmetry. We suggest that the receipt of nonreciprocated blows or insults causes loss of personal resources (R), which may be experienced as loss of self-esteem. The person who does not reciprocate adequately may then be more likely to access the agonistic strategy set, either by presaging an incipient asymmetry or by monitoring his own and the other person's R. Subjectively, this may take the form of impotent anger, a realization that the action tendency of one's anger (attack) is blocked.

The Function of the ISS

The ISS functions to stop the fighting by allowing the contestant to lose as quickly as possible. This involves signaling to the rival that one has lost and is no longer a threat to him, so that the other individual exercises "the mercy of the victor" (Weisfeld, 1977) and stops inflicting punishment; this could be called a *damage limitation function*. In addition, if one has allies, one must signal to them that they should stop giving agonistic support because their warlike signals may jeopardize one's own submission.

In humans, these signals to both rival and allies may be expressed in the form of metaphor, such as the metaphor of physical illness. The competitor signals to the rival, "I am too sick to be a threat to you," and to his supporters, "I am too sick to enter the arena on your behalf, so stop giving me agonistic support and give me nurturant support instead" (Price & Gardner, 1995).

The ISS deployer must, of course, switch off his own aggressive be-

havior and carry out whatever flight–escape–submit routines are appropriate in the circumstances. In fact, one could say that the person accesses a losing strategy set, which contains the alternatives of flight and submission.

A further function of the ISS may be to alter the cognitive activity of the individual in such a way that the ISS may be supplemented, or preferably replaced, by voluntary behavior appropriate to the reduced situation. In a cognitive stage of "acceptance," the new situation is reframed in such a way that it does not give rise to anger or resentment. For example the former rival is no longer seen as a presumptuous challenger but rather as someone who is to be respected, obeyed, and looked to for support and patronage. This change of cognition makes possible the prosocial behaviors that lead to reconciliation. Because reconciliation removes the social conditions that gave rise to the ISS in the first place, after using up any momentum or inertia it might have, the ISS is likely to be switched off. The end result is for the ISS to remove the conditions that led to the agonistic strategy set being accessed. This process could be described as "functional agonism," and its various stages are summarized in the following list:

1. Unacceptable situation (e.g., one's definition of a relationship is not accepted by a rival)
2. Conflict of interest recognized by both, leading to confrontation.
3. Fighting, with no clear outcome discernible
4. Losing becomes likely
5. Receipt of unreciprocated blows or insults
6. Mental or physical pain
7. Fall in R (R is an evaluative assessment of oneself and others that we assume was originally indexed in ancestral species by fighting capacity or resource-holding potential [RHP])
8. Agonistic strategy set accessed and ISS selected
9. ISS consists of a further fall in R (and other components of self-esteem); also, a fall in resource value and ownership (see later explanation)
10. Acceptance of previously unacceptable situation; anger toward rival changes to respect
11. Decision to yield voluntarily
12. Act of submission
13. Submission accepted by other
14. Reconciliation

If any of the last five stages fails to occur, reconciliation is blocked; the ISS continues to operate and may be recognized behaviorally and ex-

perientially as a depressive state. Depression facilitates Stages 10, 11, and 12 because it lowers R, resource value, and ownership. This alters cognition in such a way that the person feels unworthy (of anything better than the unacceptable situation), loses interest in whatever was being fought about, and feels no right to possess it anyway. The person is more likely then to yield voluntarily.

When Does the ISS Present as Depression?

If the ISS fails to remove the circumstances that caused the agonistic strategy set to be accessed in the first place, it is liable to be intensified and prolonged. When this occurs, there is a state of either dysthymic disorder or major depression.

Probably the most common block to reconciliation is that the cognitive state of "giving in–giving up" is not sufficiently intense to persuade the individual to alter the goals or attitudes in which blockage led to accessing the agonistic strategy set. Some goals are held very strongly and are resistant to change. Clinging to such goals may be described as pride or stubbornness or, more approvingly, as determination or courage. However, it is sometimes regarded as courageous to back down and admit one was in the wrong. A fictional example in which a severe degree of depression did not succeed in getting the protagonist to back down is found in the figure of Mr. Trevelyan in Anthony Trollope's novel *He Knew He Was Right*. An earlier example is Satan in *Paradise Lost*. The first book of Milton's poem is like a textbook of dysfunctional agonism. Satan has been thoroughly defeated, and he knows that he has been defeated and that he will never win, but he still refuses to yield; as in a dysfunctional human family, he forms what might be called a cross-generational coalition with Eve. Moreover, the coalition is not talked about but is symbolized by an apple.

Sometimes third parties block voluntary submission. One patient had a dominating husband who objected to her going to visit her even more dominating mother. Her mother would not allow her to submit to her husband. Consequently, her ISS became extended and intensified, and she needed treatment for depression. She only recovered fully when her mother died, whereupon she could become a satisfactory wife.

Sometimes the dominant partner demands something that the willing subordinate cannot supply. A husband may demand an enthusiastic sexual response, and his bullying because this is not forthcoming makes the wife depressed and even less sexy. A woman may demand that her husband stop fidgeting when he is unable to exert voluntary control over a tic. One spouse may insist that the other give up smoking.

Sometimes patients do not know what to do to please their partner. Sometimes there is nothing that they can do. If an older sister is bullying her younger brother because he is a boy, there is not much he can do about

it. A wife who is bullied because her husband is bullied at work experiences a similar bind. The same may happen if a dominant spouse gets depressed for any reason; the depression means such a person becomes more irritable with the subordinate spouse. Sometimes, as in the victim–victimizer interactions mentioned by Sloman (1995), it may be difficult to know who is responsible for the block; in that case, one should take a systemic view. One marital therapist, treating a woman with depression, successfully gave the antidepressant to the husband to take himself, rather than to the wife!

The Components of the ISS

There are three hypothetical constructs that behavioral ecologists have found to be essential for making mathematical models of fighting behavior:

1. *Resource-holding potential* is an estimate of an individual's fighting capacity and is therefore a component of R (sum of the individual's total resources).
2. *Resource value* is an estimate of the value of whatever is being fought over.
3. *Ownership* is a widespread convention in the animal world; an owner or resident of a territory wins a contest and an intruder loses it.

The higher these values are, the more the individual is likely to attack rather than back off. Therefore, we can expect all the components to be reduced in the ISS. It is an interesting exercise to see how many of the features of depressive illness can be accounted for by reduction in these three variables.

R is an evaluative assessment of oneself and others that we assume was originally indexed in ancestral species by fighting capacity, or RHP, only. Evolution of social complexity, however, requires modification of the concept to include the capacity to control adversarial social situations. There are many resources that people have in addition to RHP, including allies, wealth and territorial holdings, and group-conferred attributes such as membership and leadership. Recognition of one's R is probably an important component of human self-esteem. That self-esteem may have evolved from R accounts for some otherwise puzzling features of self-regard, such as its global nature and the wide interindividual variation. Lowered R accounts for the reduced self-esteem that is a common feature of depression; it also bears on related features such as guilt, shame, self-blame, inferiority, and other forms of negative self-perception.

Resource value expresses the investment of the individual in goals and incentives that have to be given up. These may be particular goals such as getting one's own way over some issue; they may be more general

such as ambition and desire for social enhancement; or they may be sym bolic such as the achievement of a meaningful philosophy or religion. T the extent that rewards are dependent on social status, resource value rep resents ambition and all forms of status seeking. Reduction in resourc value in the depressed patient accounts for the global loss of interest, ap athy, and loss of reinforcer effectiveness.

Whereas R represents the "can" of motivation, resource value rep resents the "will." When both "can" and "will" are high, motivation i high, which is represented by a liberal provision of energy. Conversely when "can" and "will" are low, one can expect the individual to feel tire and lacking in energy.

Sense of ownership is impaired in depression, and in the extreme cas the patient feels no right to exist, in contrast to the patient with elevate mood, for whom "the world is his oyster." One depressed golfer expresse this impairment in the statement "I have no standing on the course o life." In summary, we suggest that reduction in these basic variables ac counts for a considerable proportion of depressive states.

The preceding conceptualizations concern analysis of normal socio physiological processes that have eventuated in depressed states. There ar many treatment implications, and we now turn to a few that we have found useful.

NEW METAPHORS FOR THE CLINIC

Explaining Depression to Patients as Pathological ISS

Explaining depression as a "biochemical imbalance" is less useful for rationalizing the use of medication and other treatments than explaining it as an ISS. Depression may be viewed as a normal and biologically ancient method of fending off danger from another person, loss of resources, or something signaling one of these. Although it is clearly a disorder and potentially a dangerous state, depression as a brain reaction and bodily state takes center stage. As reviewed earlier, however, responses to the same stressor may occur at two brain levels, and there seems to be a general rule that the more recently evolved response abolishes the more primitive one. The question then becomes how to invoke higher level response sets.

In our experience, patients find the model rational, simple, and understandable. Depending on circumstances, one may mention that the strategy is typically out of awareness. If there is no obvious deception, possible antagonists find the communication more convincing. In other words, this state in which patients find themselves is not something planned, not a question of choice, not something bad (depressed people

are prone to think they are "bad"). Rather, it is something they find themselves saddled with, a fact of life, not under personal control.

The story of Thorlief Schjelderup-Ebbe may be useful. This lonely Norwegian boy discovered pecking order as a child, when he had often been left to his own devices in a country place, and chickens were almost his only companions. Nearly all patients already have at least some awareness of pecking order (as well as some acquaintance with loneliness). The discovery by one of us (Price, 1967) of these descriptions a half-century after Schjelderup-Ebbe made them may become part of the story. Particularly important was the resemblance of the behavior of low-ranking chickens to the behavior of depressed people, implying the possible ancientness of the response pattern.

One can also mention Martin Seligman (1975) and the behavior of "learned helplessness" he discovered in dogs that were treated inconsistently with electric shocks. The dogs became nonunreactive, apparently enduring only to live another day. Later, other researchers found that rats behave similarly when so treated. This research currently represents the most usable animal model for major depression and its recovery. For example, Petty and Sherman (1979) found that the antidepressant imipramine, when injected into the forebrains of rats, reversed their "helpless" behavior with a time course similar to that of human depression.

Patients may recognize in themselves a physiological reaction pattern in common with that of these animals. Both the animals and the depressed patients may be behaving according to a basic biological plan that resembles the response of fear in situations of imminent danger. It should be emphasized that this is probably a normal phenomenon that for the afflicted person has become abnormal. Today, the pattern has become a psychiatric problem—abnormal because its expression is stimulated too much, with wrong timing, or without present-day necessity; an ISS turned to depression is like inadvertently suggesting that a servant should weed the garden only to find the plot trampled by a monster.

As in other medical interventions, the clinician should be careful to check patient understanding. Monitoring nonverbal and verbal expressions helps one to learn whether the story makes sense in the situation at hand. The clinician should avoid imposing undue authority beyond the patient's understanding and sense of well-being, and he or she should be alert to the possibility that the treater may easily become the feared antagonist. One should take pains not to condescend to the patient and not to imply that the person is merely a lower animal.

Basic Plans

Other metaphors may be deployed to explain the idea of biological basic plan; one may note, for example, that not only people but chickens

and lizards—even clams and earthworms!—have blood cells, a basic plan structure common to invertebrates, birds, and humans. Many other body devices seem to have been modified to fit what has become the human body, but despite modifications, structures such as blood cells, limbs, and the ISS all exemplify a common device multiply appearing through the vertebrate lineage. Basic plan or platform ideas take on meaning when compared with the steering wheel in automobiles. Invented early in the history of self-propelled locomotion without racks, this ordinary device has been such a useful tool that it has not needed reinvention. It may vary from car model to car model in details of appearance and dimensions, but design functions remain much the same. Of course, basic plans in biology are transmitted down the generations not by a culturally transmitted blueprint but by the genomic coding for key molecules in the brain that in turn direct certain behaviors. The behaviors of interest in the consultation session are communicative in nature, patterns of messages to other people.

Surviving with the ISS in a competitive world may have been a useful innovation for people in the past and for people in terrible environments, but it generally is not helpful for the depressed patient. Pathological ISS may resemble the pain-producing blood cells in people with homozygous sickle cell anemia. These cells lengthen and then, knifelike, stab vessel sidewalls when relative hypoxia occurs in the bloodstream. Like suicidal major depression, this disorder can be fatal at times, but we know that the less severe heterozygous version may significantly help survival from malaria in some parts of Africa. When depressed, the patient may not be aware of deploying ISS. Like the dog whose trainer stopped shocking it but did not behave differently, the patient seems no longer capable of reacting to improved circumstances; the patient does not easily undertake a plan of action involving an assessment of changed circumstances. An ISS is an involuntary bodily state that resembles shivering, such as when one enters a stand-up freezer and stays longer than anticipated.

ISS Is Like a Shiver: Foundation for a Treatment Strategy

The most important metaphor we develop for patients—leading to an explanation of how treatment works—elaborates the shiver model. This is easily illustrated on a chalkboard, one component at a time, starting with the shiver experience itself. Everyone has shivered and seen others, even dogs, shiver, so that the metaphor becomes palpable and understandable. That one shivers because of the cold is equally palpable, and what one does to remedy the shiver response by getting warmer in various ways requires little imagination. The beginning stages of this model are shown in Table 1.

TABLE 1
Brain–Body Response Shared With Other Animals

Stimulus	Response
Cold	Shiver
Bright light	Blinking
Height	Fear of falling
Ranking stress	ISS

Note. ISS = involuntary subordinate strategy.

Advantages of a Big Brain

The differences between humans and other animals are critical to this stage of discussion with patients, after one has developed the similarities and achieved agreement that breathing, blood, shivers, and other body structures and functions are held in common and that other animals also have social rank hierarchies. The differences of language, laughter, and the extensiveness of human relationships, although obvious, now need to come to the forefront. One can point out to patients that humans have a large brain, three times greater in size than that of the nearest primate relatives and of human ancestors of 3 million years ago. What happened to bring about that change? What additional, potentially helpful functions does the larger mass entail?

Three points of the human–nonhuman difference are relevant to the meaningful metaphor for therapy:

A = *allies:* People are gregarious; they attach or bond intensively to many other people. They have an extensive ability to elicit allies. They use language and nonverbal cues to exchange information.

T = *thought:* Humans extensively deploy cognition to solve problems.

P = *plan:* People can analyze their circumstances to gain new perspectives on shiverlike involuntary responses and then act to forestall or prevent unfortunate and maladaptive reflexive or automatic reactions.

Therefore, to handle ISS and other automatic responses, people benefit from the help of others who are friendly and have their best interests at heart; they can better think through the problem using language-based conversation, reassured by indications of involvement, investment, and friendliness (the hedonic mode of Chance, 1988). With such people, one can better plan for what *should* happen the next time the analyzed circumstance appears in one's life. Instead of responding with the equivalent of shivering—automatically and involuntarily—one can respond more specifically and adaptively to present surroundings, which are better analyzed if done soberly, carefully, and while supported. One's conscious thinking goes better with the help of other people.

TABLE 2
Treatment Strategy Using Allies, Thought, and Planning

Stimulus	Response
Cold	Switch on central heating
Bright light	Sunglasses
Height	Avoid cliffs
Ranking stress	Talk to doctor or other friendly person (ally)
	Sort out problem (thought)
	Design method of handling the stressor (plan)

As noted in Table 2, the human features are not completely unique. Many animals, for instance, huddle together for warmth. Moreover, ethologist Franz de Waal (1989) detailed how chimpanzee alpha males (dominants) need to enlist the aid of allies to achieve the status. Humans as animals display unusual amounts and duration of attachment behaviors.

The point can be made when talking to patients that the major helpful factor in the larger human brain mass may be that humans are storytelling animals (Deacon, 1997). With the help of the bigger brain, humans somehow became capable of constructing whole worlds and sequences of actions that other people have done, or might do, or that we ourselves did (with varying degrees of certainty) in the past. We all are avid for such stories as evidenced by the popularity of television and novels or, for that matter, the daily newspaper, radio talk shows, and stockmarket reports. We have preferred and less preferred story lines; how they work often depends on various groups to which we belong and their values, ethnic and religious allegiances, personal experiences, and education. We seem to be able to escape the iron boot by retreat into fantasy. Anne Frank had her diary as her audience in terrible times. We use metaphors like we drink fluids; they are everyday and essential features of our existence.

Other animals drink fluids as humans do, of course, and they may have some humanlike features, as pets do. They may relate to humans and our signals, but construing signals in the first place is a human idea. Their relating through story lines and metaphors is rudimentary compared with that of humans.

Serotonin Speaks

When people recover from feeling depressed, they newly or even uniquely feel in charge. This phenomenon was nicely depicted by Peter Kramer in *Listening to Prozac*, the best-selling book on antidepressant drugs, particularly those enhancing serotonin concentration in neuronal synapses (Kramer, 1993). Kramer described a woman whose low-key depression was relieved with the selective serotonin reuptake inhibitor (SSRI) fluoxetine (Prozac) and who was no longer subject to a kind of addiction to a man

who treated her inconsistently and badly. Somehow, as she felt better, she no longer fussed about him. He left her life dismissed, no longer worth her time.

Patient A.O. (seen by Russell Gardner) presented a similar scenario. She had avoided medication for some months, but she was also unable to let go of a philandering man who would indicate interest in living with her but then show up with another woman in a pattern that enraged her repeatedly. She continued to hope that he would match her idealized version of him, despite repeated evidence to the contrary. With medication indicated by her major depression, she was finally able to say good-bye and then to feel pride in her decision (rather than grief at her loss). Perhaps a placebo unknown as such to the patient and the doctor would have had the same result, but in either event, her synaptic serotonin might have become elevated.

The recently developed SSRI drugs have achieved widespread notoriety because of their position on the covers of national magazines and best-selling books; however, Michael Raleigh and colleagues discovered well before these drugs came into vogue that serontonin in the blood of dominant vervet monkeys is twice as high as in subordinates (Raleigh, McGuire, Brammer, & Yuwiler, 1984). In work with humans, this research group found higher levels of whole blood serotonin in fraternity leaders and in men with higher ratings on Type A personality measures (people who are more driven, active, and energetic).

When it became clear that fluoxetine and its relatives, the other serotonergic drugs, made people feel better—not only those with major but also those with lesser depressions as well—these investigators asked what these drugs would do to the ranks of subordinates who received them. They gave them selectively to lower ranking monkeys, and the answer was definitive. Male vervet subordinates newly and clearly took dominant positions (Raleigh, McGuire, Brammer, Pollack, & Yuwiler, 1991).

We know that this is not the case with humans. Someone who is less depressed from a drug that raises serotonin in the body is not thereby a dominant bully. Indeed, less—not more—aggression correlates with rising serotonin in the human body. Conversely, people dying from violent suicides, arsonists, and people more willing to give electric shocks to other people (bullies?) have lower—not greater—amounts of serotonin in their bodies (Linnoila & Virkkunen, 1992). Humans seem to be less hurtfully aggressive and more comfortably in charge when the level of serotonin is increased.

People have the capacity to belong to many groups and to have many allegiances (each with its own story line). John Birtchnell observed that humans extend relationship story lines to nonhumans, even nonanimate objects (Birtchnell, 1993). We stop or go at a stoplight, a commander for the moment. We relate readily not only to other people but also to parts of

ourselves or to ourselves of the past or future. We may say, "My hurting back is letting me down." The now-abstinent but sick alcoholic or cigarette smoker says that she or he treated the self badly in the past or expresses anger at the things lost by the substance-abusing person of the past. This metaphoric capacity enables people to have a sensible goal in the ISS column of Table 2. Parallel to warmth in the shiver column is the idea that one can be in charge of oneself or one's parts, particularly those parts of one's self that behave involuntarily and maladaptively.

Being "In Charge" by "Giving Way" Rather Than "Giving In"

To illustrate how "taking charge" may involve an attitude that a person takes toward the self and others with respect to ISS, one can relate to patients the story of a woman who told Dr. Leon Sloman (1995) of being fired from a position in city government. An election had swept in the opponent of the person appointing her, but she felt that "they can't do that!" Humiliated and furious, she was readying herself to sue. With careful questioning, Dr. Sloman ascertained the reality of the "spoils" system in that city at that time, and he suggested that she not eventually "give in," that is, resentfully battle toward a certain loss in a fight-or-flight reaction —in this case "fight like a cornered rat" does out of desperation and with little hope of winning. Rather than deploy an aggression-laden, face-saving sure-loss strategy, she was advised to "give way" instead. He suggested that she collect maximum severance pay and put her energies into taking charge of a new job search. She took his advice and soon thereafter reapplied her energies happily toward a new job.

The story points out that a person can take charge of the unruly parts of his or her own life, including issues with other people after an assessment of circumstances. This departs from the image of the authority who causes others to defer or do his or her bidding. Instead, one's own unruly wishes, impulses, inhibitions, and other inner forces must be shepherded, constrained, or encouraged. "Taking charge" as a metaphor says that a person has the capacity to look at his or her parts and consider them to be individuals who will respond to the person's taking a commanding position with respect to them. The way to combat an ISS is to realize fundamentally the involuntary nature of the response, to recognize intellectually and with the aid of allies that reality is not tested by the perceptions that stimulated the state, and to plan one's strategy for personally taking charge.

Sometimes there is great advantage to detecting and revealing hidden ways that the patient persists in battling hopeless battles and to realize thereby that a cleverer method of coping is indicated. One may suggest to a patient, in line with the insight of Beck's cognitive therapy, that the fundamental premises on which the patient is operating may have flaws.

Automatic responses (i.e., automatic negative thoughts) may operate, well apart from conscious decision making.

Our model involves allies, thought, and planning (ATP). The shiver–ATP–take charge model entails some elements of therapy; however, it should not be called psychotherapy (involving the disembodied psyche) but sociophysiological therapy, which fully enfranchises the body. It differs from cognitive therapy because it focuses on the normal physiology of behaviors that we propose are basic to the pathophysiology of the patient's troubles. Biochemical defects may in fact exist, such as different thresholds for illness onset in vulnerable people, and the ways that they operate must be subject to future investigation. But surely there must also be long-standing physiological systems that involve preparatory sets for interactions with other people. This idea is in line with the science of medical specialities other than psychiatry, each of which has a well-understood normal anatomy and physiology.

Case Examples

The Sculptor's Anger

O.C., a 40-year-old metal-working artist in financial difficulty, loves his wife, called here Cynthia, although he finds her uncompromising manner disconcerting. When first seen (by Russell Gardner), O.C. met criteria for major depression (dysphoria, guilt, problems with concentration, sleep disturbance, and lowered energy). An SSRI antidepressant caused him to feel better, but when he was furious at his wife, he continued episodically to damage his shop equipment. He reported a longer fuse on his temper after taking the medication, but the temper remained. At one point, he yelled at a secretary for the doctor's relative lack of availability, but he was calm and polite when, a few minutes later, he spoke to the doctor himself. Partly, he had cooled off, but as is typical in depression, he expressed anger down-hierarchy but not up-hierarchy. He damages his tools (symbolic subordinates) and yells at human subordinates, but to his wife and doctor, he displays politeness and even submissiveness.

His wife attacks him if she has any perception of a tie to another woman, particularly one, Jan, with whom O.C. lived prior to knowing Cynthia. He feels that Jan is well in his past; she is married and far away. However, Cynthia angrily confronted him with an implication of interest when she discovered that he had produced a commissioned work for Jan's brother, who lives nearby. O.C. had held off telling Cynthia because she was in the midst of grief for the sudden death of her own brother and he wished to protect her (as well as to avoid the predictable hassle). When she discovered the sale because the brother wanted to buy something else, she was furious. The ensuing argument caused O.C. to feel beaten down and helpless.

During O.C.'s individual therapy session, the shiver–ATP–take charge model was outlined on a chalkboard; it was suggested that both O.C. and Cynthia were in "shiver mode" for much of their argument. She would not give up and maintained the argument; he felt that selling a commission to anyone was important given their financial straits. He needed to take charge and win, although he wanted to do this as much as possible "without rubbing it in" to her. He later reported feeling better when he implemented methods to augment his marketing without sacrificing his artistry. To celebrate, he gave a party in her honor, which surprised and pleased her.

The No-Longer Helpless Daughter

Patient A.I. is 48 years old and approached treatment because she had depressive symptoms meeting criteria for major depression and because she wished "to get over my mother." Her mother, dead for 3 years, had been alcoholic and subtly controlling throughout the patient's life. A.I. felt that her depression was related to her relationship with her mother. An SSRI drug caused her to feel better but did not affect recurrences of sharp painful episodes of angry depression that had no apparent cause. In each episode, the patient wondered whether she should cause her own death—for example, leaving the car running in her enclosed garage. These episodes were very disturbing; A.I. was powerfully tempted by the idea during the relatively short periods the idea held sway.

A.I. was interested in the shiver–ATP–take charge model, and after practicing using it in sessions, she systematically deployed it outside the sessions. As a consequence, she reduced the session frequency to the level of occasional visits. When a powerful depressed feeling would take over, she "knew exactly what do do"—she sought out a variety of allies, ranging from her husband to her daughter to a good friend. At times, she recalled what had been discussed in the session and enlisted me in imagination as her ally of the moment, again illustrating the power of the human imagination in solving problems.

CONCLUSION

Use of the shiver–ATP–take charge model in combination with antidepressant medication exemplifies sociophysiological therapy, a conceptual integration of the otherwise disembodied *psycho*therapy with pharmacotherapy. New metaphors relate present woes to propensity states antedating language—to basic plans and ancient strategies that have stemmed from reaction patterns to conspecifics that were well established long before humans existed. Therapeutically, deliberate use of allies,

thought, and planning (ATP) helps people plagued by automatic reactions, especially the ISS, to overcome the deleterious effects of maladaptive basic plans. Human-specific cognitive attributes that are correlated with the enlarged human brain include storytelling and the metaphoric representation of one's components as subordinates over which one can be in charge.

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