The Descent of Man: An Evolutionary Perspective on Major Depression

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The Descent of Man:

An Evolutionary Perspective on Major Depression

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Abstract

I once speculated that the essence of depression[1,2] would some day be revealed through understanding its paradoxes (Beck, 1967). Since then, I have reflected that if we could understand depression fully, we would have a better understanding not only of psychopathology but also of personality. Clinical depression appears to violate the most hallowed notions regarding human nature: the survival instinct, sexual instinct, maternal instinct, hunger drive, pleasure principle, and reality principle. Further, depression is characterized by profound physiological-behavioral changes: loss of appetite, sex, sleep, psychomotor retardation. Moreover, the impenetrable gloomy outlook and continual self-reproaches in severe depressives defies common sense. Above all, the self-defeating nature of the patient's thinking and behavior deepen the mystery.

How can we make sense of this picture of depression comprehensible? In previous writings, I presented an explanatory model of clinical depression. In our present state of knowledge, such a model should fulfill at least two criteria:

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[1]I refer in this paper to "classical" depression which is manifested by deficits in sleep and appetite in contrast to atypical depressions manifested by excesses in these functions.

[2]Many of the evolutionary constructs in this note were inspired by other writers, to whom I am indebted: Birtchnell, 1987; Bowlby, 1991; Crawford, 1989; Gardner, 1988; Gilbert, 1989; Glantz and Pearce, 1988; Hobfoll, Lilly, and Jackson, 1992; Jonas and Jonas, 1974; Hesse, 1991; Price and Sloman, 1987; **(other Brit)**.

(a) compared to other models it should explain the most phenomena in the most parsimonious way, (b) it should be testable. When people are clinically depressed, they experience a profound shift in the content of their thinking (a systematic negative bias) and a change in the form of their thinking (more rigidity, exaggeration, selective abstraction, overgeneralization). Further, the belief that they are used to interpret events (e.g., "If somebody doesn't like me, I'm unlovable") inevitably lead to negatively biased inferences and conclusions (Beck, 1964).

The formulations of negativity and a thinking disorder, specifically the way depressed individuals process information and access memories about themselves, represent the proximal mechanisms in depression. Patients sink into a downward spiral related to mutually reinforcing interactions among the psychological systems: cognition (information processing), affect, motivation, and behavioral patterns. For example, the patient attaches negative meaning to dysphoria ("things are terrible") and to loss of constructive motivations, inertia, or impaired performance ("I am lazy" or "I am incompetent"). This sequence results in a further giving up, leading to further inertia, more self-criticism, pessimism, and sadness -- until after several months the cycle mysteriously "bottoms out" and the patient starts to get better.

When we look at the precipitating events, especially in the unipolar or reactive depressions, we find that the individuals frequently ascribe significance to negative events far out of proportion to the practical damage to their lives. Further, the initial exaggerated cognitive responses to an unpleasant event are continued into the depression and become rigidified and prepotent. For

example, an individual who experiences a disappointment in career, school, or interpersonal relations may react with the conclusion "I am a failure" or "I am unlovable." Generally, these ideas dissipate over time but, if depression develops, the conclusion merges into stable beliefs (or schemas) that take control of his or her thinking.

This model of depression simply describes what happens in depression but does not address the question of how such a disorder originated. An explanatory model should address the broader question of etiology. In reflecting on this question, I was impressed with the similarity of the clinical picture of depression from patient to patient and also to the similarities to naturally occurring states in animals subject to separation or defeat. This suggested a possible function for depression. First, I suggested an explanatory of distal antecedents: analogous experiences of failure or loss may have been more relevant to real, vital issues in prehistoric circumstances than they would today (Beck, 1991). Thus, a present failure to achieve academic goals might evoke an archaic meaning of a life-threatening defeat relevant to ancient competitive struggles. Similarly, the enormous psychological reaction to a broken intimate relationship could be reminiscent of analogous events in an evolutionary past that would disrupt the individual's protective social matrix and violate the necessary conditions for preserving his or her genetic lineage.

My conclusion from these speculations is: What we deem important in life, what brings joy or sadness, anger or anxiety, is ultimately derivative from evolutionary goals of survival and procreation ("individual fitness"). Within this conceptual framework, the precipitation of depression can be attributed to a reaction to events with an archaic symbolic meaning relevant to survival and reproduction.

The stereotyped nature of the profound reaction (clinical depression) to these archaic symbols (defeat or deprivation) poses the next problem in our analysis. An enlightening bit of information is presented by the bipolar affective disorders, which seem to be controlled more by internal neurochemical derangements than external events, and, yet, in the depression phase, present the same clinical picture as do the unipolar depressions (Beck, 1967). Although there is frequently an understandable relation between the first episode of depression or mania and external circumstances, subsequent "mood swings" in bipolar patients are not infrequently triggered by relatively trivial events or none at all. The manic-depressive pattern seems to be embedded like a "time bomb," ready to be defused by a particular combination of internal (endocrine?) and external factors.[3]

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[3]See Post, 1992, for a neurophysiological explanation of the "Rindling phenomenon," which refers to the increasing sensitivity to stressors with successive episodes of mania or depression.

The Evolutionary "Program"

The essential identity of the phenomena of bipolar and unipolar depressions led me to the view of major depression as a kind of program, a relic from an earlier era when it might have had an evolutionary function. The same program that could have allowed our ancestors to survive adverse circumstances can be triggered today by events with a conceptual link to these circumstances but which no longer pose a substantial threat to phylogenetic goals.[4] A peculiar variant of the program (mania) appears in bipolar disorders, and may very well have evolutionary antecedents, but I will have to postpone a further elaboration on that phenomenon to a later note.

[4]It should be noted that clinical depression is a reaction of individuals within a group or family structure not of the groups themselves. Hence, adverse conditions do not produce "group depressions" although they may precipitate depressions in individuals within the group.

Applying this evolutionary concept to unipolar depression, I suggest that we are born with -- to varying degrees -- a potential for depression. From birth on, our life experiences will determine whether this potential crystallizes into a full blown program (depression) and what counterbalances or buffers we have against its activation. Ultimately, an array of factors relevant to our specific vulnerability (Beck & Emery, 1985) and the nature of our life circumstances will determine whether the program will be activated.

Assuming a remote psychobiological origin, how did this depressive potential evolve? What evolutionary function could it have served? To address these questions, it is necessary to use our imagination about prehistoric life and then fit the theory of depression into the procrustean bed of evolutionary principles. Making extrapolations from the present to the past ("what may have happened") and back to the present again ("what could be happening") is a risky undertaking, beset with anthropomorphism, zoomorphism, and circular reasoning -- but it provides an interesting heuristic approach to the task of unraveling the mystery of depression.

Animal observations and experiments have suggested that following social deprivation (McKinley, Suomi, & Harlow, 1971), primates manifest behavioral characteristics resembling human depression. It has been speculated that the function of "deprivation depression" is to attract the attention of other significant figures. These observations provide support for one aspect of the present model.

It has been suggested that defeat depression removes the unsuccessful individual from competitive battles and thus may preserve life (Nesse, 1991).

Further, by adopting a submissive role, the individual no longer invites attacks from competitors (Gilbert, 1989; Price & Sloman, 1987). As I will note below, I propose that these functions can be subsumed under the broader construct of "conservation of energy."

From the standpoint of life in primeval times, certain personal and interpersonal resources may be viewed as crucial for attaining the evolutionary goals of survival and reproduction. Among the obvious resources, still highly valued, were intimate and group bonding. Also important were individual characteristics such as competence and attractiveness. The benefits of intimate bonding consisted of receiving nurturance and protection (when young or disabled); group bonding facilitated foraging, hunting, and mating; successful parenting of offspring promoted reproductive success.

Expressions of love and affection are conventional but durable symbols of successful bonding and produce rewarding feelings of pleasure. Conversely, loss of an important relationship is also a symbol -- it represents deprivation of the benefits that supposedly were accrued by the lost relationship. Thus, the "loss of love" may have a psychobiological impact that greatly exceeds the actual deprivation of potential resources. Another form of intimate bonding is parental investment in offspring. From an evolutionary perspective, loss of an offspring constitutes a serious blow to reproductive success (Crawford, 1989). Similarly, status and acceptance in one's group presumably improves access to essentials and to sexual success. In prehistoric times, rejection by the group would lead to physical isolation and increased vulnerability to the various dangers of the wild, whereas loss of status presumably diminished access to

food and to potential sexual partners. Similarly, defeat in competition would lead to loss of status. We presume that an adaptational response would have been a state similar to depression, which would call a halt to unnecessary expenditure of energy.

Finally, evolutionary success depended on individual characteristics: health, vigor, intellectual functioning, personal attractiveness. The perceived loss of these attributes could in themselves constitute important depressogenic symbols. The sense of failure articulated by many depressed patients may reflect the failure to fulfill the evolutionary imperatives of successful bonding and parenting. Or more precisely, unsuccessful bonding and parenting symbolize a failure to reach goals imprinted by evolutionary pressures. The price exacted by "nature" for such failures would be a sense of helplessness, embedded in a depressive syndrome.

Enforced Conservation of Energy

My evolutionary formulation of clinical depression is reminiscent of the lingo of economic depression, but there is an antecedent for this type of analogizing from another discipline in Darwin's borrowing of population concepts from Malthus (Bowlby, 1991).

In essence, I suggest that clinical depression represents a genetically determined program (or adaptation) that evolved to limit total depletion of an individual's internal resources and energy. In analogy to economic depression, activity and expenditure of energy is reduced in response to an expectation of a continuing scarcity of resources (external and/or internal) -- with no prospects of short-term recovery.

The appraisal of long-term adverse circumstances and of a lack of other resources that are adequate to modify these circumstances provides the basic calculus or algorithm for triggering the depression program. A potentially depressogenic set of circumstances would include situations that produce a significant loss of external resources in a primeval environment (loss of kin or mate, loss of status due to defeat, or loss of mobility and increased vulnerability due to illness or physical handicap). Following a depressogenic loss, the individuals perceive[5] themselves as incapable of restoring the status quo ante and expect that further expenditure of energy would be fruitless and counterproductive in the current conditions of sparsity or handicap (manifested in the individual's statements such as "I can't" or "I am powerless"). Under these conditions in which further productive activity might exhaust residual resources and energy, an automatic enforced conservation of energy would have permitted the individual to survive until the circumstances became more favorable. Of course, it should be emphasized that this reaction is atavistic and poorly adapted to the current environmental niche.

The kind of conditions that prompt the conservation adaptation are a loss of status or a deprivation of an important personal or interpersonal resource. Since status and family membership facilitate access to necessities, a significant enduring loss (in the absence of compensatory or protective factors) in ancestral situations would require cutting back on expenditure of energy until new

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[5]Note that the trigger is the perception rather than the actuality that a loss is substantial and irreversible. The algorithm involved in making this determination is probably part of the genetic heritage.

resources are acquired. As pointed out, the perceived diminution of resources need not have been external; an internal disorder such as illness could be appraised as depleting sources of energy permanently and trigger the depressogenic program.

According to the conservation of resources paradigm (Hobfoll, Lilly, & Jackson, 1992), various behavioral and subjective symptoms of depression that involve conservation of energy become comprehensible. Difficulty starting an activity, loss of initiative, easy fatigability can be attributed to switching off the power by the program. Loss of appetite and libido are adaptational in terms of reducing the drive to forage and mate. The evolutionary goal of reproduction yields to the goal of "survival in the midst of scarcity" and is manifested by the inertia and loss of appetite as well as loss of libido. In essence, the program enforces demobilization and inactivity through loss of perceived positive reinforcement (anhedonia), prevailing dysphoria, pessimism regarding outcomes, and subjective fatigue. This set of characteristics contrasts with the fight-flight program which involves mobilization of the behavioral systems and gears the organism for action.

While "normal" sadness, particularly following a disappointment, may provide a spur to reexamine one's goals, tactics, or strategies (Nesse, 1991), the persistent negative affect and pessimism, and anhedonia in depression put a damper on formulating any new goals and/or strategies that would involve expenditure of energy. Indeed, the "instructions" contained in the program help to implement a state of inertia: "I can't do it"..."I'm too weak"..."It's easier to lie in

bed"..."Everything is futile." Energy conservation may be manifested in "negative" motivations such as "I don't want to do anything."

In thinking of depression as a "program," we need to make a distinction between volitional, conscious, controlled patterns of thought and behavior and the involuntary, non-intentional, nondeliberate automatic depressive program. When disappointed in love or work, we can normally review our options and make a deliberate choice of a plan of action. When depressed, the choice is imposed on us -- by the program; our reactions are patterned, stereotyped, and unintentional. The depressive program can be analogized to the anxiety program which is clearly recognized as involuntary and has an obvious function -- preparing the individual to cope with danger. The function of depression is less clear because it is concerned with less obvious long-term functions. In each disorder however, when the reaction is disproportionate or inappropriate, psychological interventions can reduce the distress and dysfunction. Cognitive-behavioral interventions can ameliorate the unrealistic fears at the core of phobias and generalized anxiety, for example, and the unreasonable negative beliefs and expectations at the core of depression. Similarly, medication can directly neutralize the neurochemical disturbance of anxiety disorders or depression.

There are still important problems to address: how the "depressogenic program" is constructed to conserve personal resources and how this is related to the catastrophic drop in self-esteem, the hallmark of clinical depression.

Resources, the Self-Concept and Self-Evaluation

As already pointed out, resources consist of the available supplies and the instrumentalities for obtaining the necessities (food, shelter, mates) required to fulfill evolutionary goals. The individuals appraisal of his or her valued resources is integrated into his or her internalized representations (or self-concept). The valance assigned to these resources is expressed in the self-esteem. The valance fluctuates according to the kind of appraisal. In depression, the depreciated appraisal by the patient of their resources is reflected in their negative self-representations (Beck, 1967). The perception of the self as helpless leads to the expectation of negative outcome. The self-concept of the self as unlovable leads to expectations of rejection. Thus, the self-concept is closely tied to long-term expectations.

People's concepts of themselves (the mental representations of resources) may be divided into three sectors or domains (Beck, 1976). The first sector has to do with the representations of the person's individuality -- sense of identity; autonomy; mobility, physical power and vigor; health; intellectual/mental competence; functioning; attractiveness; skills; and knowledge of the world. The concerns in this sector revolve around perceived deficiencies or disabilities resulting in a sense of helplessness: disease, intellectual dysfunction, immobility, loss of vitality, disorientation, loss of control, personality defect. Fears of damage to or blockage of essential functions may progress into generalized anxiety disorder, panic, hypochondriasis, or obsessive-compulsive disorder -- depending on the nature of the threat and the specific coping mechanisms. In depressives, the fear becomes a fait accompli; the individual

perceives that the presumed catastrophe has occurred. The perceived loss of a crucial resource is translated into a negative representation of the self, incorporating any combination of attributes such as weak, trapped, helpless, incompetent, defective, different.

The second sector is more relevant to representations of the public image such as status, group acceptance, manifestations of success, control over others. The usual social fears are exemplified by fears of negative evaluation social phobias, and generalized anxiety disorder (Beck & Emery, 1985). In depression, the negative self-image is expressed in self-characterizations such as defeated, inferior, despised, downgraded and, in more global terms, as a loser or a failure. In this sense, the private self-concept corresponds to the social self-concept, a view expressed by the "Chicago School" (Mead, Cosby, & Dewey).

The third sector of the self-concept consists of the internal representations of intimate relationships, often referred to as "loved objects." These representations include the attachments to close family members, lovers, and close friends. Fear of the loss of positive affective attachments leads to anxiety. The perceived loss of an important relationship can lead to beliefs such as "I am alone...I have nothing...I am unlovable...I am unloved...I am helpless."

In unipolar (or reactive) depressives the shift in self-concept or self-esteem is triggered by circumstances that appear to reduce or eliminate resources that the individual regards as vital to happiness. The sources of happiness correspond to the resources that are essential for fulfilling evolutionary goals -- although, of course, the individual does not evaluate the

sources of satisfaction in terms of "reproductive success." For example, the latent belief "I can never be happy unless I am loved" is an expression of an evolutionary goal centered on reproduction. An individual with an exaggerated form of this belief will be particularly susceptible to rejection that will activate this. If this belief is activated by rejection, it may lead to the drop in self-esteem and expectation of continued deprivation that constitute necessary (not sufficient) conditions for depression.

The algorithm a set of equations (which is probably heritable and varies from person to person) and determines whether the program for "conservation of energy" is activated.

Whether a unipolar or bipolar depression, once the program is activated the negative self-concept and expectancies appear to mediate the other symptoms. Notions such as "I am helpless" or "I am unlovable" and the predictions ("I can never be happy") energize the self-instructions ("There's no use in trying"). Further, as pointed out previously, this cognitive nucleus leads to the other symptoms of depression.

The negative self-concept and its network of dysfunctional rules, formulas, etc., helps to curtail expenditure of energy by subjecting interpretations of life experiences -- present or past -- to a consistent negative bias. The consequence is a renunciation of competitive and expansionistic goals and a collapse of the structures of normal volition and activity as the program shapes the individual's evaluations and motivations.

It is obvious that not everybody who loses a loved one or experiences a humiliating defeat or a crippling illness becomes depressed. The individuals who are relatively immune to depression are able to draw on enough positive valances from their self-concept and/or from other external resources to offset the triggering of the depressive program. They have a relatively high "set point" for depression. In contrast, the rapid cycling bipolar cases have a low set point. Those individuals who respond to noxious events with depression seem to go through a specific sequence. For example, lack of success in reaching a goal may lead to unfavorable comparisons to other people ("They are smarter than I") or a sense of responsibility and self-blame ("I have let my parents down") and then to the belief "I am inadequate (inferior, stupid, defective)." Separation from

a supportive spouse may lead to the conclusion "I have no one to depend on" and then to the belief "I am helpless."

This sequence of a negative event triggering a drop in self-esteem fulfills the necessary (but not sufficient) conditions for the precipitation of reactive depression. The self-debasement and the expectation of a continued deprivation of resources triggers the depressive program which fortifies the negative self-concept ("I am inferior" or "I am helpless") and hopelessness ("I will never be happy"). These negative beliefs (or schemas) become prepotent and usurp further cognitive processing (Beck, 1964). The precipitous drop in self-esteem and the negative outlook become prolonged and relatively intractable.

Summary

An individual's perceived personal resources constitute the necessary instrumentalities for fulfilling the evolutionary imperatives: survival and procreation. In prehistoric times, strength, health, efficacy, personal attractiveness and the like were crucial resources for gaining access to food and shelter, status, and acceptance into the band, family bonding, mating, and parenting. Similarly, bonding within the band and family were crucial for survival and procreation (reproductive success). In contemporary life, these resources are still highly valued and bring happiness or sadness: we are prone to overreact to archaic symbols of acceptance or rejection; success or failure; attachment or desertion. Increased value of the sectors of the self (personal attributes, status, or intimate bonding) produces a good feeling (euthymia); inflation, euphoria. A devaluation of a sector produces sadness; a profound drop in esteem, depression.

Various personal resources are represented in the sectors of the self-concept (individuality, group bonding, intimate bonding). Our self-esteem (and pleasure or dysphoria) is determined to some degree by the way that we personally value the components of the self. Events that increase our positive evaluation of the self (self-esteem) cause positive affect; decrease, negative affect.

I view clinical depression (unipolar or bipolar) as an archaic or anachronistic program shaped to conserve resources. This depressogenic program centers on a catastrophic drop in self-esteem. The archaic depressogenic program is constructed to maintain the individual at a minimal level of activity through the period of hardship and scarcity of resources. The calculation of the need for energy saving is automatic and nonvolitional and occurs according to an algorithm which is probably heritable and has high inter-individual variability.

The activation of the negative self-concept, whether the consequence of identifiable, significant losses or purely the manifestation of an internal biological cycle (bipolar depression), is the central mediator of the depressogenic program. The perception of the self as lacking in the essential ingredient for happiness leads to the other manifestations of depression: dysphoria, anhedonia, loss of initiative, inertia, suicidal wishes. The energy-saving program is also manifested in the loss of appetite (thereby eliminating the drive to forage), loss of libido (reducing drive to mate), reduction of spontaneous activity (reducing desire to advance). The sleep disturbance could be attributed to increased vigilance due to the increased vulnerability.

The interpretations of life experiences are subjected to a consistent negative bias, emanating from the negative self-concept, and its network of depressogenic beliefs. As a result of the continued negative representations of the self, experience, and future outlook, the patients relinquish their goals and give up trying. The negativity and passivity eventually clear up -- unless they are reversed earlier through therapeutic interventions.

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The Descent of Man: An Evolutionary Perspective on Major Depression[1]

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This is the first in a series of invited columns in which eminent psychopathologists in the field of depression were asked to write short essays. They were encouraged to be provocative or controversial if they wished or to provide their opinions on a topic of interest. In this issue, Aaron Beck, M.D., presents the second part of a 2-part discussion of depression as a "programmed" psychobiological response of evolutionary significance. To inaugurate this section of the newsletter and to stimulate contributions from the membership, Dr. Beck's column is longer than those that will appear in future issues. Dr. Beck specifically requested commentary and welcomes reactions from readers. Responses can be sent to him personally or can be submitted to the Members' Corner section of the newsletter (see guidelines on p. XX).

—Connie Hammen, Associate Editor

Enforced Conservation of Resources

In essence, I suggest that clinical depression represents a genetically determined program (or adaptation) that evolved to limit depletion of an individual's resources. In analogy to economic depression,[1] the psychological systems slow down or "go on hold" in response to an expectation of a continuing paucity of resources—with no prospects of short-term recovery.

The appraisal of one's noxious circumstances as being irreversible and of oneself as lacking in sufficient resources to modify these circumstances provides the basic calculus or algorithm for triggering the depression program. Following a depressogenic loss, the individuals *perceive*[2] themselves as incapable of restoring the status quo ante and expect that further expenditure of energy would be fruitless and counterproductive (manifested in the individual's statements such as "I can't" or "I am powerless"). Under these conditions of an expectation of exhaustion of residual resources, an enforced conservation of energy would permit the individual to survive until the circumstances become more favorable.

I suggested earlier that the kind of conditions in the wild that prompted the conservation adaptation were a loss of status or a deprivation of an important personal or interpersonal resource. Since status and family membership facilitate access to necessities, a significant enduring loss (in the absence of compensatory factors) would require cutting back on expenditure of energy until new resources are acquired. The diminution of resources need not have been external; an internal disorder such as illness could trigger the depressogenic program.

Applying the conservation of resources paradigm (Hobfoll, Lilly, & Jackson, 1992), various behavioral and subjective symptoms of depression can fall into place. Difficulty starting an activity, loss of initiative, and easy fatigability can be attributed to switching off the power by the program. Loss of appetite and libido are adaptational in terms of reducing the drive to forage and mate. In essence, the program enforces demobilization or inertia: loss of positive reinforcement (anhedonia), prevailing dysphoria, pessimism regarding outcomes.

While "normal" sadness, particularly following a disappointment, may provide a spur to reexamine one's goals, tactics, or strategies (Nesse, 1991), the persistent negative affect and loss of positive reinforcement (anhedonia) in depression puts a damper on formulating any new goals and/or strategies that would involve expenditure of energy. Indeed, the "instructions" contained in the program help to implement a state of inertia:

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[1]My evolutionary formulation of clinical depression is reminiscent of the lingo of economic depression, but there is an antecedent for this type of analogizing from another discipline in Darwin's borrowing of population concepts from Malthus (Bowlby, 1991).

[2]Note that the trigger is the *perception* rather than the actuality that a loss is substantial and irreversible. The algorithm involved in making this determination is probably part of the genetic heritage.

"I can't do it" ... "I'm too weak" ... "It's easier to lie in bed" ... "Everything is futile."

In thinking of depression as a "program," we need to make a distinction between volitional, conscious, controlled patterns of thought and behavior and the nonvolitional, nondeliberate, and automatic depressive program. When disappointed in love or work, we can normally review our options and make a deliberate choice of a plan of action. When depressed, the choice is imposed on us—by the program; our reactions are patterned and stereotyped. The depressive program can be analogized to the anxiety program which is clearly involuntary and has an identifiable function—preparing the individual to cope with danger. The function of depression is less clear but is concerned with more long-term issues. In each disorder however, when the reaction is disproportionate or inappropriate, interventions can return the organism to euthymia. Cognitive-behavioral interventions can ameliorate the unrealistic fear at the core of phobias, for example, and the unreasonable negative beliefs at the core of depression. Similarly, medication can directly neutralize the neurochemical disturbance of anxiety disorders or depression.

We still have to examine how the "depressogenic program" is constructed to conserve personal resources and how this is related to the catastrophic drop in self-esteem, the hallmark of clinical depression.

Resources, the Self-Concept and Self-Evaluation

As already pointed out, resources consist of the available supplies and instrumentalities for obtaining the necessities (food, shelter, mates) required to fulfill evolutionary goals. In depression, the appraisal of one's resources is reflected in the individual's self-representations or self-concepts. Whereas highly valued personal resources are mirrored in a positive self-concept, devalued personal resources are represented in a negative self-concept.

People's concepts of themselves (the mental representations of resources) may be divided into three sectors or domains (Beck, 1976). The first sector has to do with the representations of the person's *individuality* —sense of identity; autonomy; mobility, physical power and vigor; health; intellectual/mental competence; functioning; attractiveness; skills; and knowledge of the world. The concerns in this sector revolve around deficiencies or disorders resulting in a sense of helplessness: disease, intellectual dysfunction, immobility, loss of vitality, disorientation, loss of control, personality defect, ineffectiveness. Fears of damage to or blockage of essential functions may progress into generalized anxiety disorder, panic, hypochondriasis, or obsessive-compulsive disorder—depending on the nature of the threat and the specific coping mechanisms. In depressives, the fear progresses into a *fait accompli*, translated into negative representations of the self: any combination of attributes such as weak, trapped, helpless, incompetent, unattractive, defective, different.

The second sector is more relevant to representations of the *public image*, such as status, group acceptance, manifestations of success, control over others. The usual social fears are exemplified in evaluation fears, social phobias, and generalized anxiety disorder (Beck & Emery, 1985). In depression, the negative self-image is expressed in self-characterizations such as defeated, inferior, despised, downgraded, and, in more global terms, as a loser or a failure.

The third sector of the self-concept consists of the representations of attachments, of intimate relationships, often referred to as "loved objects." These representations include the nature of the ties to close family members, lovers, and friends. Fear of the loss of positive affective attachments leads to anxiety. The loss of an important relationship can lead to beliefs such as "I am alone ... I have nothing ... I am unlovable ... I am helpless."

In unipolar (or reactive) depressives the shift in self-concept or self-esteem is triggered by circumstances that appear to reduce or eliminate resources that the individual regards as vital to happiness (important for fulfilling evolutionary goals). For example, a person who has a latent belief "I can never be happy unless I am loved (or successful)" will be particularly susceptible to the kind of rejection (or failure) that will activate this belief. The activated belief may lead to the drop in self-esteem and expectation of continued deprivation that constitute the conditions to

which the algorithm is applied. This set of equations (which is probably heritable and varies from person to person) determines whether the program for "conservation of resources" is activated.

Whether a unipolar or bipolar depression, once the program is activated, the negative self-concept and expectancies appear to mediate the other symptoms. Notions such as "I am helpless" or "I am unlovable" and the predictions ("I can never be happy") energize the self-instructions ("There's no use in trying"). Further, as pointed out previously, this cognitive nucleus leads to the other symptoms of depression. The evolutionary goal of reproduction yields to the goal of "survival in the midst of scarcity" and is manifested by the inertia and loss of appetite as well as loss of libido.

The negative self-concept and its network of dysfunctional rules, formulas, etc., helps to curtail expenditure of energy by subjecting life experiences to a consistent negative bias. The consequence is a renunciation of expansionistic goals and a collapse of the structures of normal volition and activity as the program shapes the individual's evaluations and motivations.

It is obvious that not everybody who loses a loved one or experiences a humiliating defeat or a crippling illness becomes depressed. The individuals who are relatively immune to depression are able to retain enough positive images of themselves and/or other external resources to offset the triggering of the depressive program. Their algorithm has a relatively high "set point" for depression. In contrast, the rapid cycling bipolar cases have a low "set point." Those individuals who respond to noxious events with depression seem to go through a specific sequence. For example, lack of success in reaching a goal may lead to unfavorable comparisons to other people ("They are smarter than I") or a sense of responsibility and self-blame ("I have let my parents down") and then to the belief "I am inadequate (inferior, stupid, defective);" separation from a supportive spouse may lead to the conclusion "I have no one to depend on" and then to the belief "I am helpless."

This sequence fulfills the necessary condition for reactive depression. The self-debasement and the expectation of a continued deprivation of resources triggers the depressive program which consolidates the negative self-concept ("I am inferior" or "I am helpless") and hopelessness ("I will never be happy"). These negative beliefs (or schemas) become prepotent and usurp further cognitive processing (Beck, 1964). The precipitous drop in self-esteem and the negative outlook become prolonged and relatively intractable.

Summary

An individual's perceived personal resources constitute the necessary instrumentalities for fulfilling the evolutionary imperatives: survival and procreation. In prehistoric times, strength, health, efficacy, personal attractiveness and the like were crucial resources for gaining access to food and shelter, status, and acceptance into the band, family bonding, mating, and parenting. Similarly, bonding within the band and family were crucial for survival and procreation (reproductive success). In contemporary life, these resources are still highly valued and bring happiness or sadness: we continually overreact to archaic symbols of acceptance or rejection; success or failure; attachment or desertion. Increased value of the sectors of the self (personal attributes, status, or intimate bonding) produces a good feeling (euthymia): inflation, euphoria. A devaluation of a sector produces sadness: a profound drop in esteem, depression.

Various personal resources are represented in the sectors of our self-concept (individuality, group bonding, intimate bonding). Our self-esteem (and pleasure or dysphoria) is determined to some degree by the way that we personally value the components of the self. Events that increase our positive evaluation of the self cause positive affect; decrease, negative affect. Clinical depression (unipolar or bipolar) is viewed as an archaic program shaped to conserve resources. This depressogenic program centers on a catastrophic drop in self-esteem. The archaic depressogenic program is constructed to maintain the individual at a minimal level through the period of hardship and scarcity of resources. The calculation of the need for energy saving is automatic and nonvolitional and occurs according to an algorithm which is probably heritable and has high inter-individual variability.

The activation of the negative self-concept,

whether the consequence of identifiable, significant losses or purely the manifestation of an internal biological cycle (bipolar depression), is the central mediator of the depressogenic program. The perception of the self as lacking in the essential ingredient for happiness leads to the other manifestations of depression: dysphoria, anhedonia, loss of initiative, inertia, suicidal wishes. The energy-saving program is also manifested in the loss of appetite (thereby eliminating the drive to forage), loss of libido (reducing drive to mate), reduction of spontaneous activity (reducing desire to advance). The sleep disturbance could be attributed to increased vigilance due to the increased vulnerability.

The interpretations of life experiences are subjected to a consistent negative bias, emanating from the negative self-concept, and its network of depressogenic beliefs. As a result of the continued negative representations of the self, experience, and future outlook, the patients relinquish their goals and give up trying. The negativity and passivity eventually clear up—unless they are reversed earlier through therapeutic interventions.

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