Information Gating: An Evolutionary Model of Personality Function and Dysfunction

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UTILIZING principles of evolutionary biology, a model is developed which defines the essential adaptive functions of personality as a whole, and describes how failure in those functions produces the maladaptations characteristic of personality disorders. In this model, personality is hypothesized to have evolved specifically to make human culture possible by managing the flow of information within the culture, especially by mediating teaching and learning, competition and cooperation, and leading and following. These essential culture-forming capacities of personality have at their root the more basic function of information gating, which is defined here as the continuous regulation by personality of its openness for the bidirectional flow of sensory, cognitive, emotional, and motor information between internal self and external social systems, to best meet the needs of both in various situations. The maladaptations characteristic of personality disorders are postulated to be due to their being chronically and frequently too open or too closed for expressing or assimilating social information, given their circumstances. The relationship of this model to other evolutionary models of personality is discussed, as are its clinical and research implications.

The evolutionary approach for a theoretical understanding of personality and personality disorders offers unique advantages. Principal among them is its ability to elucidate the functions of systems, which it defines as the specific adaptive value which caused them to appear and to remain in the equipment of the species (Tinbergen 1963). This advantage is significant because defining the evolutionary functions of personality is a prerequisite for understanding its design features and operation (Buss 1996; Cosmides and Tooby 1994) as lucidly as cardiologists, for example, understand the anatomy and physiology of the heart. The evolutionary approach can be used to suggest the possible functions of personality as a whole or the functions of its component parts, of what is common to all personalities or what is different between individuals (Cipriani 1996; Revelle 1995).

Recent evolutionary theorists have tended, however, to focus more on individual personality differences and component traits than on commonalities and wholes. For example, Buss (1991, 1996) hypothesized that the multiplicity of psychological

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mechanisms which comprise human personality evolved specifically to solve the adaptive problems of survival and reproduction in social hierarchies, and that differences between individual personality traits were crucial determinants of their relative success in these hierarchies. Similarly, Jones and Daniels (1995) used the example of histrionic personality disorder to argue that certain human personality traits, and their phylogenetic antecedents, conferred advantages in attracting mates, and that the more exaggerated versions of personality, found only in humans, may have evolved through sexual selection in the same manner as elaborate displays of feather and horn evolved in other species. The Cloninger (1994) personality model is founded on the hypothesis that the function for which personality and its underlying brain systems evolved was to mediate adaptive learning in order to facilitate survival and reproduction, and that inherited differences between individual temperaments could be traced to differences in the activities of monoamine neurotransmitter systems subserving these neurogenetic mechanisms of learning. Millon (1990) developed an evolutionary personality, based on the premise that personality evolved specifically to meet three evolutionary and ecological challenges: to enhance and preserve life by maximizing pleasure while reducing pain, to enhance adaptation by balancing passive accommodation and active modification to the environment, and to maximize replicative success by balancing promotion of self and nurturance of others. However, Millon (1990, 1996) also applied his model primarily to explaining individual personality differences, which he saw as the result of differences in styles of balancing these polar opposites.

Another potential advantage of the evolutionary approach to personality is that it should facilitate the definition of dysfunction in personality (and hence of personality disorders) in the same way a cardiologist defines dysfunction of the heart—as a relative failure to perform the essential functions for which it evolved. This advantage has not been well realized, however, because evolutionary theorists have tended to define abnormal and disordered personalities as extreme trait variants, rather than as habitual failures in the performance of essential functions. For example, Buss (1991, 1996) stresses the importance of individual differences in personality traits, as defined by the Five-Factor Model, in determining strategies for solving the adaptive problems of ascending social hierarchies and attracting mates. However, he does not make clear how personalities classified as abnormal or disordered according to the Five-Factor Model—those with extremely high or low scores on one or more trait dimensions (Widiger et al. 1994)—should have difficulties obtaining positions of social dominance or reproducing. Likewise, although Cloninger (1994) defines personality function in terms of neurogenetic mechanisms of adaptive learning, he and his coworkers define personality disorders as extreme variants of temperament and character, as measured by the seven-factor Temperament and Character Inventory (Cloninger et al. 1993; Svrakic et al. 1993), without making explicit how these extreme traits might impede adaptive learning.

The purpose of this paper is to complement the work of these theorists by applying principles of evolutionary biology to the answering of two questions. What are the essential adaptive functions for which human personality as a whole evolved and how is relative failure to perform these functions characteristic of dysfunctional and disordered personalities?

THE EVOLUTIONARY FUNCTIONS OF PERSONALITY

It may be a bit reductionistic to speak of the functions of personality as if it was a unitary entity, when personality is clearly comprised of many somewhat poorly integrated subsystems like emotions, cognition, and self. Furthermore, human personality certainly did not evolve as a single gene mutation in the past, but evolved in
many increments, as the work of Cloninger and Gilligan (1987) attests. It is even unlikely that more recently evolved personality capacities, like self-aware cognition and language, afford exactly the same adaptive advantages to modern humans that more primitive personality capacities, like territorial aggression and the ability to form social hierarchies, afforded the ancestral animals in whom they first appeared. Nevertheless, it will be assumed at the outset that personality as a whole can be seen to serve a set of unitary functions, just as every phylogenetic advancement in learning chronicled by Cloninger and Gilligan (1987) can be seen to serve the single broad function of facilitating adaptive changes in behavior as a result of experience.

Genes, Culture, and Personality

Evolution by means of natural selection requires two independent processes—differential fitness and heritability (Sober 1997). In classical genetic natural selection, differential fitness is the result of competition for survival and mating success between organisms with different phenotypic capacities to compete in various ways, such that some are naturally more successful than others (Darwin 1859/1993). Heritability is afforded by the replication and transmission to successive generations of the genes which encode these various adaptive capacities. In genetic natural selection, each organism seems to be “selfish,” in that it competes against all others to meet its own need to survive and reproduce.

As Dawkins (1976, 1982) has convincingly argued, however, the “selfish organism” model is not the only one possible. From the standpoint of the gene, it makes no difference whether any given organism survives or reproduces, as long as the gene itself survives and replicates. This is the “selfish gene” concept of Dawkins (1976), which has helped explain, for example, the survival advantage to social insects like honey bees of limiting reproduction in their societies to only a few organisms, while the rest remain essentially sterile. It is certainly not in the best interest of worker bees (as individuals) to forgo reproduction, and they have no “motivation” to do so. Rather, worker bees will begin laying their own unfertilized eggs (which become drones) into chambers in the hive as soon as the queen is no longer present to inhibit this behavior with her pheromones (Ridley 1977). Honey bees have evolved a mechanism whereby workers are prevented from reproducing in the presence of royal pheromones because this division of labor makes survival of their common genome more likely than if they all tried to reproduce and care for their own eggs.

According to Dawkins (1982), the societal and group effects of genes are part of their “extended phenotype,” which includes all their effects on the world at large capable of influencing their own replicative success. In this view, the extended phenotype of the wolf, for example, must include the cooperative pack it forms while hunting, no less than its size, speed, and the strength of its jaws. At the tissue level, the extended phenotype of a neuron includes the complex neural networks it forms, even though the neuron’s participation in such networks has no direct affect on its own survival or reproduction. The ability of the neuron to form neural networks evolved because it enhanced the survival chances of the genes that the neuron had in common with the reproductive cells of its parent organism. The most significant adaptive challenge for the neuron, therefore, is not survival or reproduction, but forming ever more complex information processing systems to aid the survival of the organism of which it is a part.

In humans (and other higher mammals), the most conspicuous manifestation of extended phenotype is culture. The simplest sociobiological definition of culture is the capacity for behavioral transfer of information through teaching and learning (Bonner 1980). It might also be defined as a powerful second mode of natural selection (Bonner 1980, Dawkins 1976, Sober 1997). Table 1 compares the cultural and genetic modes of natural selection. In
cultural natural selection, the primary unit of information which replicates to be passed from individual to individual is the “meme” (Dawkins 1976), analogous to the gene in genetic natural selection. Units of information which contribute to cultural evolution include not only all major scientific, economic, political, and religious ideas, but also all thoughts, feelings, perceptions, attitudes, symbols, and behaviors which are capable of conveying information about human life and well-being. Interindividual variation in memes is largely the result of creativity and differential experience, analogous to genetic mutation and recombination in genetic natural selection. In cultural natural selection, differential fitness is determined by competition for leadership and the survival of ideas, rather than by competition for reproductive success for the survival of genes or organisms. Heritability is provided by interindividual teaching and learning, rather than by genetic transmission of information.

Because culture is such a powerful adaptive advantage in the collective, any capacity in the individual which contributes directly to culture must also be powerfully advantageous. But what individual capacities contribute directly to culture formation? It is evident from Table 1 that culture requires individuals to be able to import, process, store, and export units of cultural information. It also requires them to be able to use their unique experiences, stored memes, and internal creativity to generate novel memes in response to new or ongoing adaptive challenges. That is to say, culture depends on everyone being able to assimilate and remember important aspects of the attitudes, beliefs, thoughts, and feelings of those with whom they interact during their lives, and to be able to communicate to others the attitudes, beliefs, thoughts, and feelings which have become their own through experience and creative invention. The survival of newly created memes depends on their creators being able to compete against those with opposing attitudes, beliefs, thoughts, and feelings to determine which are most worthy of remembrance and implementation. The propagation and dissemination of dominant memes then requires individuals to actively teach and learn them, not just by rote, but along with critical analysis and testing, as necessary to ensure their continued fitness. These processes underlie, to some extent, nearly every human social interaction, and all social institutions.

The central hypothesis of this paper is that personality evolved specifically to mediate and manage all the individual capabilities which make cultural natural selection possible. That these culture-forming capacities require constant mediation and management by some agency within each individual is evident from the fact that many of them occur in antithetical pairs, such as competition and cooperation, leading and following, and teaching and learning. For cultural natural selection to work, something within each individual must decide, moment to moment, whether to compete or cooperate, lead or follow, or teach or learn. My hypothesis is that personality evolved to be that decision-making agency.
Personality as an Information Gate

The culture-forming capacity of personality includes both internal information storage and processing functions and external information import and export functions. Relevant internal storage capacities include declarative memory and the emotional and procedural memory systems which contribute to the enduring sense of self. Other internal functions include cognitive thought, emotional feeling, and internal motivational states. External, interindividual information transfer functions include the abilities to send and receive symbolic speech, expressions of emotion, and other communicative behaviors. Although both groups of personality functions are essential for culture formation, the capacities for interindividual information transfer may be of primary importance for determining the functional competence of a personality. This is because the process of culture formation (as opposed to the content of information contained within a culture) depends completely on individuals appropriately transferring information between each other and with their social institutions. From the standpoint of General Systems Theory, personality as a natural system can be an effective coordinating interface between the individual and his social systems only by being open to a continual flow of something going both ways (Gray et al. 1969; Laszlo 1972; von Bertalanffy 1968)—in this case, information.

Although the abilities to import information through perception, and to export information through behavioral communication, both commence at the very beginning of life, the ability to regulate these processes obviously does not. However, if a child did not develop the capacity to regulate his openness for the flow of cultural information, he would never be able to import the information worth learning while simultaneously resisting assimilating that which wasn't. He would never be able to teach others what he believed to be worthwhile while withholding all the extraneous thoughts and feelings which were not important at the moment.

The importance of regulating the flow of information entering and leaving each personality goes well beyond situations of teaching and learning. The very stability of each individual self, and all shared social systems, depends on each individual being able to regulate the flow of information passing through him appropriately. Without the ability to ignore at least some expressed impressions of others, for example, the self concept could potentially be redefined by every encounter with another person; one could not have a stable sense of self. Likewise, without the ability in every individual to modulate the process of exporting information, shared social systems would be continuously reinvented by everyone participating in them, and there would be no stable culture. On the other hand, if individuals could not open up for both incoming and outgoing information when appropriate, there could be no growth or development of individual personalities, relationships, or societies.

Table 2 lists examples in four categories of social relatedness situation, defined by whether they require an individual's personality, under ideal conditions, to be relatively open or closed for incoming and outgoing information. Situations in which personalities are required by cultural norms to be more open for incoming information are those in which one is called upon, in general, to actively perceive and be affected by what is being communicated by others. Such openness may be necessary for one's own sake, as when being trained, or for the sakes of those who need someone to assimilate the information they are exporting, as when empathizing with another. Similarly, situations in which cultural norms require personalities to be more open for outgoing information are those in which social competence may be measured by the capacity to spontaneously express genuine thoughts, feelings, and other symbolic representations of internal states. In such situations, there may even be a need to insist that others
assimilate the information being exported, either for one’s own sake or for the sakes of those who need to learn what is being communicated.

However, even in situations of intimacy, which permit the greatest bidirectional openness, one is obviously never given free rein by societal norms to communicate anything one wishes in any way wished. Most situations require each individual to withhold outward communication of at least some spontaneous thoughts, feelings, and impulses, including even by facial expression, demeanor, or tone of voice. For one’s own sake, it is usually also necessary to close the core self off to some of the information which is received from others, so that the course of action is not deflected and self concept is not damaged needlessly—for example, by information which may be inaccurate or irrelevant.

As an illustration, consider the expressive psychotherapy situation, which, while unique, has features in common with many other social situations. In psychotherapy, the patient is required to be more open for spontaneous outward communication of genuine internal cognitive, emotional, and motivational information than he may ever have been before. Yet the patient is not permitted to export, through words or behavior, information which may be destructive to either participant. He is not allowed to act on many of his fantasies and fears. For his part, the therapist is required to be uncommonly open to empathically perceiving and assimilating the information being exported by the patient. Yet if the therapist is to remain safely neutral, he must be able to resist absorbing and being affected by excessively seductive or aggressive communications by the patient. Because the patient in the psychotherapy situation also tends to be uncommonly open to assimilating the information exported by the therapist, the therapist is required to be very careful about which of his internal thoughts and feelings he shares, while ensuring that what he does communicate is honest and real, and always includes an attitude of genuine respect for the patient.

Obviously, it would be an oversimplification to view the information regulating function of personality in any situation as being a simple on-off switch for information flowing into and out of the individual. Which information is imported or exported, when, and how are all crucial. Nevertheless, for want of a better term, I propose to call this essential function of personality information gating, and to define it as the continuous regulation of the openness of personality for the bidirectional flow of information between self and social systems to meet the needs of both in each situation. Information gating is the mechanism whereby personality serves its essential adaptive functions of competing and cooperating, leading and
following, and teaching and learning, in support of cultural evolution.

The Goal of Information Gating

Just as the altruistic behavior of worker bees is not motivated by any knowledge that they are benefiting their hive and species, the information gating function of human personality cannot be continuously motivated or guided by an interest in advancing human culture. Even if one cared enough about the welfare of the human species, one could not know, moment to moment, how behavior would affect culture in the long run. Yet most personalities seem to be steered by a powerful set of internal motivating forces, such as those which give rise to feelings like shame when unexpectedly failing to gate information appropriately in social situations, and pride when succeeding well. Toward what monitorable end point do the internal motivating forces of personality steer the process of information gating? What is its goal (Bowlby 1969)?

Obviously, one can only speculate. An interesting possibility, though, is suggested by the fact that the movement of information into the self from the cultural environment, or out to the environment from the self, has the effect of bringing inner and outer worlds into closer approximation. Perhaps the goal state towards which personality continuously steers information gating (without ever fully attaining it) is precisely the state of greater equilibrium, or at-oneness, between inside and outside. Perhaps personality guides information gating toward this goal by continuously comparing the internal psychological milieu of images, thoughts, feelings, and impulses to the information contained in the current environment, including oneself in it. The greater the mismatch between inner and outer worlds, the more the personality may be motivated to attempt to establish equilibrium through the flow of information between them. Equilibrium can be increased either by creating in the environment a reflection of internal experience, or by assimilating information from the environment to make oneself more a mirror of it.

Illustrations of the importance of bringing inner and outer worlds into closer equilibrium include nostalgic longings to reexperience things, persons, or situations from the past, even if they are not remembered particularly fondly, and feeling of comfort and pleasure associated with being in a familiar environment with familiar people. Most people associate preferentially with others who share their values, goals, and ideas, and many feel particularly satisfied if they succeed in convincing others to assimilate their own deeply-held values and ideas. When choosing music to listen to, or other recreational activities, one tends to prefer either what reflects one's existing internal state, or what one would like one's internal state to come to reflect. Illustrations of human motivations to avoid or modify situations of disequilibrium include xenophobic feelings of fear or loathing for the unfamiliar, and discomfort in being immersed in strange surroundings. Most people tend to avoid talking about religion or politics in casual social settings because of the disequilibrium that would certainly result; yet many are compelled, at other times, to explain their views to those who see things differently than they do.

Personality Dysfunction and Personality Disorders

If human personality evolved specifically because it made possible the adaptive advantages of cultural evolution, then dysfunction in an individual personality can be defined as a limitation or defect in its ability to promote culture. This could be because of a relative inability to import, store, process, create, or export culturally relevant information, or to compete, cooperate, lead, follow, teach, or learn as needed to promote culture. This is an evolutionarily valid definition of personality dysfunction, but it may not be very useful clinically. One can imagine a direct causal connection between certain personality
traits or characteristics—for example, the excessive cooperativeness common among dependent personalities—and reduced efficiency in the process of cultural evolution. However, it is beyond the capacity of human observers to judge which traits or behaviors will benefit culture in the long run.

A more clinically useful definition of personality dysfunction is one based on the information gating function of personality. From this point of view, a personality can be said to be dysfunctional to the extent it fails to perform its essential adaptive function of continuously regulating the flow of information entering and leaving the self for the maximal benefit of both self and society. Personality dysfunctions which are the result of it being too open for the exporting of internal information range from minor slips of the tongue and faux pas to inappropriate displays of sexuality or temper to more severe problems with impulsivity or emotionality. Dysfunctions which are the result of personality not being open enough for outgoing information range from minor inhibitions to more severe and chronic inability to express one’s thoughts or feelings to others. Alternatively, a personality could be dysfunctional because it is too open for the assimilation of social information coming in from the outside. This could range from being a little too quick to agree and submit in certain situations, to tending to emotionally attach to others too indiscriminately, or to being unable to maintain one’s beliefs and independence in the face of disagreement from others. Finally, dysfunctions resulting from a personality being too closed for incoming information could range from minor insensitivities to others’ feelings to more severe inability to accurately perceive and appreciate others’ ideas and concerns, including an incapacity to empathize or establish emotional attachments.

From the above, it is evident that problems with information gating lie along a spectrum, with relatively normal dysfunctions at one end, and those which are more pathological at the other. Even among relatively normal personalities, there must exist a range of competence at matching information gating to the specific requirements of self and others in various situations, based on maturity, life experiences, physical health, stress level, and countless other factors. Brief, non-pathological failures of optimal information gating are common, partly because the task of maximally benefiting both oneself and everyone else in various situations is complex and difficult. One reason it is so difficult is because the requirements of self and society, in many situations, are very ambiguous. Another reason is that optimal personality functioning in some situations—for example, those involving significant hardship or danger—require the gating of overpowering perceptions, thoughts, and emotions.

At the other end of the spectrum from the normal dysfunctions described above lie the more chronic and frequent problems with information gating characteristic of personality disorders. Table 3 illustrates the relationship between styles of inappropriate information gating and certain personality disorders. Of course, the categorical personality disorders described in DSM-IV (American Psychiatric Association 1994) do not each fit neatly into the four cells of Table 3. For example, personality disorders which are marked by emotional coldness and a lack of spontaneous expressiveness, such as paranoid personalities, can at times be overly expressive of certain inappropriate thoughts and feelings, such as mistrust and intense anger. Avoidant personality disorders are characteristically too closed for intimate communication with others precisely because they may find themselves unable to close themselves off sufficiently to information which they perceive as critical or rejecting. Even individuals with borderline personality disorder, who are often too quick both to assimilate others’ thoughts and feelings and to manipulate others with their own, may at the same time be rigidly unable to import the social information necessary to truly empathize with those to whom they attach.
Table 3

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<tr>
<th>Too Open for</th>
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<tr>
<td>Incoming Information</td>
<td>Incoming Information</td>
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<td>BORDERLINE</td>
<td>ANTISOCIAL</td>
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<td>DEPENDENT</td>
<td>SCHIZOID</td>
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Nevertheless, it is hypothesized that all of the DSM-IV personality disorders are maladapted exactly because they are chronically and frequently too open or too closed for incoming or outgoing information, given their circumstances. All of them form and maintain dysfunctional social systems precisely because of their defects in information gating—social systems which may be either too rigidly stable or widely unstable—and all of them can engender significant discomfort in those participating in their social systems as a direct result of their defective information gating.

**Discussion**

Three areas which warrant at least brief discussion are the relationship of the information gating model to other evolutionary models of personality and personality disorder, its implications for clinical practice, and its research implications.

**Relationship to Other Evolutionary Models**

The information gating model proposes that human personality evolved its information regulating capabilities in order to make possible the powerful adaptive advantages of cultures. This theoretical possibility was suggested in the past by Cosmides and Tooby (1989). However, personality theorists such as Buss (1991), Cloninger (1994), and Jones and Daniels (1996) have argued that aspects of human personality evolved primarily or exclusively to meet the more ancient challenges of individual survival and reproduction. These two perspectives on the adaptive significance of personality clearly differ, but they are not necessarily incompatible. For example, Buss (1991, 1996) hypothesized that the traits of extraversion (assertiveness) and agreeableness (factors I and II of the Five-Factor Model) evolved because they enhanced chances for survival and reproduction in social hierarchies. Clearly, high assertiveness is essential for successfully dominating individuals of lower standing. High agreeableness is critical for being able to form alliances and submitting to individuals of higher rank in a hierarchy. Since in some species, success in a dominance hierarchy is a determinant of both survival and mating success (Andersson 1994), it follows that high assertiveness and agreeableness in some species may promote survival and reproduction. However, competing to determine which animals are fittest to survive and breed is not the only adaptive advantage offered by social dominance hierarchies. In wolf packs, for instance, cooperative interactions outnumber competitive ones, and the well-developed social order of the pack greatly facilitates cooperative efforts to solve group problems (Mech 1970). The highest ranking individuals provide the leadership necessary for the success of these cooperative endeavors, including making decisions about how best to hunt a particular prey, and directing and controlling the behavior of other pack members. The cooperativeness of lower ranking individuals ensures the necessary cohesion of the pack. In humans, it is doubtful whether socially dominant individuals live longer or have more offspring than others, but the importance to culture of their leadership is undeniable. Thus, the model presented in this paper proposes that with the evolution of the capacity to
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form cultures, personality characteristics such as assertiveness and agreeableness, which had previously served survival and reproduction exclusively, were modified and co-opted to serve cultural evolution as well. This process of older capabilities being co-opted to solve newer problems is not uncommon in evolution (Dumont and Robertson 1986).

The most substantive difference between the model developed in this paper and previous evolutionary approaches to personality is in how they define personality dysfunction and disorder. Previous evolutionary models do not speak much on the subject of personality dysfunction. What references they make to personality pathology are not in terms of the adaptiveness or maladaptiveness of situation-specific behaviors, but rather are in terms of enduring personality traits (e.g., Millon 1996). Therefore, instead of defining personality disorders as abnormalities displaying chronic and widespread dysfunction, previous evolutionary theories define them as extreme variations of otherwise normal personality traits. It is beyond the scope of this paper to review the debate between trait consistency and situational specificity as determinants of personality function (for a discussion, see Millon 1996; Pervin 1990). The information gating model predicts two problems with the trait perspective of personality pathology. First, individuals with extreme personality styles might be more likely to gate information inappropriately in many situations if the extremeness of their styles is accompanied by inflexibility, but there’s no reason an individual’s personality shouldn’t be considered quite healthy even though it is introverted, for example, 96% of the time, as long as the remaining 5% covered all situations in which being outgoing was most essential. Otherwise, it is doubtful that either the individual himself, or those who knew him, would consider his introversion a problem. Second, a person could, theoretically, be quite average in terms of his enduring personality traits, yet still be chronically and severely dysfunctional, if the information gating strategies he adopted were often wrong for his immediate situations. It is not known how many individuals fit into one of these two cases of disagreement between the information gating and trait models of personality dysfunction, but those who did would be clinically significant. Individuals in the first case would be diagnosed as pathological by the trait models even though functioning quite well; those in the second case would be given a clean bill of health even though experiencing significant problems.

Clinical Implications

The clinical predictive and explanatory value of the model presented in this paper follows from its proposition that personality does it job of facilitating adaptation by exercising one basic function—information gating—and that to perform this function in various situations it chooses between two basic strategies—information importing and exporting. The model further proposes that there are four basic ways personality can fail in its job—being too open or too closed for incoming or outgoing information. One example of the clinical utility of this approach is in understanding vulnerability and resistance to psychologically traumatic experiences. In the present model, psychological trauma can be understood as a problem of inadequately gating incoming information which, by its nature, is damaging once absorbed. Observed differences between individuals in their resistances to the effects of overwhelming life experiences (van der Kolk 1987) can be understood as resulting partly from differences in their abilities to adequately gate the perceptions, emotions, and cognitions which accompany these experiences. The information gating model predicts, furthermore, that individuals for whom being too open for incoming information is a particular problem—e.g., borderline personality disorder—may be especially vulnerable to such trauma. Therefore, the significant finding among individuals with posttraumatic stress disorder of certain personality disorders, particularly borderline disorder (e.g., South-
wick et al. 1993), may be understood as partly resulting from these personalities being more likely than others to be damaged by exposure to traumatic information which they are less able to effectively gate.

Besides adaptation in traumatic situations, the information gating model may be useful for understanding problems of adaptation in more normal situations. For example, the underlying relationship pathology in cases of chronic marital discord may be understood and treated by elucidating the areas in the relationship where the partners are unable to develop some degree of equilibrium with one other. Whether in the areas of life goals, styles of sexual expression, parenting styles, or tastes in friends or furniture, persistent disequilibria can be caused by four possible dysfunctions. One or both of the partners may be unable or unwilling to share enough of their wants, needs, likes, dislikes, and how they see their role and that of their partner in the marriage (too closed for outgoing information). They may be unable to accurately perceive and assimilate enough of what the other communicates in these areas (too closed for incoming information). One or both may be unable to resist repeatedly bombarding their partner with excessive or inappropriate thoughts, feelings, and impulses, particularly hostile and destructive ones (too open for outgoing information). Finally, one or the other's ability to maintain a stable, independent self may suffer because of assimilating too much from the other (too open for incoming information). The model also predicts that the stability of relationships such as marriages depends on both partners being able to tolerate the dysphoria which may accompany the disequilibrium situations that must often occur. By drawing attention to the specific personality dysfunctions which underlie maladaptation in relationships, the information gating model offers a useful heuristic for classification and treatment planning.

Whereas adaptation in dyadic relationships such as marriages involves combining and balancing two information gating strategies (information importing and exporting), the adaptation of one individual to a much larger organization often allows only one strategy—importing information to make the self conform to the organization. Examples of this unequal adaptation process include the situations of a child going to a new school or an adult being indoctrinated into a religious or military organization. The information gating model predicts that in such situations, the two major causes for failed adaptation in spite of high motivation to adapt are the individual being either too closed or too open for incoming information. If too closed, the individual will not emotionally attach to the organization sufficiently to be able to adopt its values and attitudes, and his identity will not change sufficiently through incorporating them. He may also fail to attach sufficiently to other individuals in the organization, compounding his alienation. If too open, the individual may become panicked because his identity has changed too quickly and drastically through conforming to the organization. He may fear he has lost too much of who he was.

The information gating model offers a useful perspective on several clinical phenomena associated with personality disorders. First, it provides a framework for understanding how all the diverse cognitive, emotional, and behavioral phenomena which comprise the diagnostic criteria for personality disorders actually contribute to maladaptation and social dysfunction, for they are all instances of situationally inappropriate information gating. Second, it offers an explanation for the observed high rate of comorbidity among DSM-IV personality disorders (Widiger et al. 1991), in that the underlying information gating problems which motivate patients to seek mental health treatment cut across categorical personality disorder diagnoses. Likewise, the high prevalence of personality disorder, not otherwise specified, in studies in which that diagnosis was included as an option (Widiger and Costa 1994) might also reflect the degree to which underlying information gating...
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dysfunctions are not fully captured in the criteria sets for the other axis II diagnoses. This might be because information gating problems are sometimes either more circumscribed or more diffuse than the patterns of dysfunction described for the other personality disorders.

The information gating model advances our understanding of the intense countertransference feelings which therapists and other healthcare workers characteristically experience when working with certain personality disorders, particularly borderline and narcissistic personality disorders (e.g., Adler 1993; Ivey 1995; Kernberg 1986; Kohut 1968). When a patient with a severe personality disorder communicates intense sexual, aggressive, grandiose, idealizing, or other socially inappropriate thoughts, feelings, or behaviors, the therapist cannot avoid reacting to them by either closing off to this inappropriate information to a degree that runs counter to the empathic requirements of the treatment situation, or absorbing and responding to them in a manner that would be even more inappropriate. Either way, the inappropriate information gating of the severely disordered personality unavoidably induces inappropriate information gating and reduced equilibrium in the therapist, causing dysphoria.

Finally, the information gating model contributes to an understanding of the adaptive role played by the ego mechanisms of defense, including those that are pathological. Vaillant (1984) suggested that in addition to their traditional role of protecting the individual against painful internal conflicts, defense mechanisms served an adaptive function to “minimize sudden changes in internal and external environments by altering how these events are perceived” (p. 44). The information gating model extends this idea by suggesting that as information regulating tactics, ego mechanisms of defense evolved not only to stabilize both internal self and external social systems, but also to promote the evolution of culture. Even though their immediate goal in most situations is the enhancement of internal-external equilibrium (even at the cost of accurately perceiving and communicating how different inside and outside really are), they contribute to culture by promoting both cooperation (e.g., when one’s own nonconforming thoughts, feeling, or impulses are suppressed, repressed, or denied) and competition (e.g., when the thoughts or feelings of others are denied, distorted, or relegated behind one’s own projections or displacements).

Directions for Future Research

The major challenge for empirically testing the model developed in this paper is to devise a valid methodology for measuring the information gating function of personality, whether this is viewed as an assortment of loosely-related perceptual, cognitive, emotional, and behavioral capacities, or as a collective abstraction. However, existing methodologies which may be applicable include some of those developed for research on aspects of social intelligence, consisting of the abilities to appropriately send, receive, and process social information in various situations (Salovey and Mayer 1990; Sternberg and Smith 1985). Among them are studies of the accuracy with which subjects recognize, from nonverbal cues alone, either the specific emotions being expressed, or the situations or relationships in which these emotions are expressed, by target individuals viewed on videotape or in still photographs (e.g., Nowicki and Carton 1993; Rossenthal et al. 1979; Sternberg and Smith 1985). The degree to which individuals are aware of the intensity of their own emotional expression has been measured by comparing subjects’ self-report to that of independent judges of the intensity of their facial expressions while viewing an emotion-provoking videotape (Barr and Kleck 1995). Most pertinent, perhaps, have been studies of the capacity for empathy, given that empathy involves both the accurate importing of cognitive and emotional information and the exporting of appropriate emotions and behaviors in response (Bennett 1995; Feshbach and

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Feshbach 1982; Layton and Wykle 1990). Empathy has been measured empirically, using self-report questionnaires (e.g., Davis 1983; Long 1990), and by quantifying the verbal (e.g., Chick et al. 1979; Hanson and Scott 1996; Milner et al. 1995), nonverbal (Chisholm and Strayer 1995), and even physiological (Patrick et al. 1994) responses of subjects to a variety of emotionally charged situations experienced vicariously through videotape, photographs, or the spoken or written word.

These research methods all measure, to some extent, the appropriateness and accuracy of the social information imported and exported by personality, according to self-report or under laboratory conditions. If abnormal performance on these tests of social intelligence is correlated with chronically inappropriate information gating in natural situations as well, then measures such as these may differentiate severely dysfunctional personalities from those which are more normal. Consistent with this prediction are the findings that individuals with narcissistic (Watson et al. 1992), schizoid (Chick et al. 1979), and aggressive antisocial (Miller and Eisenberg 1988) personality pathology tended to perform poorly on measures of empathy, while individuals with borderline personality disorder appeared to be unusually open to perceiving the emotional states of others (Park et al. 1992). Furthermore, sexual offenders demonstrated deficits in their abilities to empathize with women and children in hypothetical situations (Hanson and Scott 1995), while mothers at high risk for child abuse demonstrated impairments in their abilities to respond empathically only to infants who were crying (Milner et al. 1995).

Few firm conclusions can be drawn from these 5 studies. Further research is clearly needed to determine whether empirically measured empathy, or other aspects of social intelligence, actually reflect the information gating functions of personality. Research is also indicated to determine to what extent the maladaptive thoughts, feelings, and behaviors characteristic of personality disorders and other severely dysfunctional personalities may be due to defective information gating.

REFERENCES


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