

MASTER LECTURE

What Do the MMPI Scales Fundamentally Measure? Some Hypotheses

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I consider the question of whether all psychopathological behaviors can, on an evolutionary foundation, be considered as positive adaptations. I proposed that higher functions can be differentiated from their associated emotional modulations at simultaneous subjective, behavioral, and neural levels and that organizing analyses in this way will enable us to fill in our understanding of both the effects and relief of traumatic experiences. I then present each of the 8 clinical scales of the MMPI (Hathaway & McKinley, 1943) as a dimension of positive adaptation with simultaneous cognitive-emotional, operant-classical, and neocortical-limbic elements. A variety of life experience paradigms are then offered to explain the factors that operate to increase MMPI scale elevations as well as countermeasures that can operate to reduce such elevations. Understanding all such behaviors as adaptive leads to a notable enhancement of empathy.

I would like to begin with a seemingly single question that Starke Hathaway asked from time to time 50 years ago. His query was: Can all behavior be considered adaptive? At this point in time, concepts of evolutionary adaptation have almost completely overtaken all areas of biology, particularly as structure and function maximize the capacity of the organism to survive. Psychology has only recently started paying much attention to the applications of evolutionary logic, and this has often not been much more than lip service to the idea that we *should* be thinking more in evolutionary terms than we have been.

Intuitively, the evolutionary answer to Starke's question, of course, can only be yes. Everything about us has evolved to adapt to *something*. In biology, the theory of evolution is constantly leading to questions as to how the particular organism being studied has changed to adapt to changing circumstances: its behavior, its capacity to reproduce, its genetic makeup, its physiologic reactions to extreme circumstances. Evolution is both an explanatory frame of reference and a guide to multiple lines of biological inquiry. But when and where have questions about "adaptation to what" been asked about psychopathology? The word evolution is rarely more than an oblique implication in the *Journal of Abnormal Psychology* or any clinical or psychopathology-oriented journal that I can find.

I believe our fixation on terms such as maladaptive has gotten in our way. Self-defeating, insightful, maladjusted, short-sighted, and so on, all transparently imply maladaptation—in a sense, "anti-adaptation." Dysfunctional is perhaps less pejorative, but it still has a clearly "maladaptive" implication. I would like to examine what might follow if we finally were to accept the inexorability of evolutionary logic and insist on searching the dimensions of psychopathology for affirmative answers to Starke's question.

A SUBJECTIVE/LEARNING/NEURAL FOUNDATION

Before laying out my basic set of hypotheses, I need to digress for a moment on what I see as a long-term and vital limitation in our attempts to apply learning theory to psychopathology, a task begun so admirably by Dollard and Miller in 1950 but which, in many ways, lacks in diagnostic specificity (e.g., everyone has double approach-avoidance conflicts). A key problem, to my mind, is the overwhelming emphasis of our Western thinking on operant learning. Although affective notions keep intruding into formulations of cognitive therapies—for example, rational-emotive therapy—it so often seems as if greater cognitive control over our emotional reactions, or at least to be less driven or governed by problematic and maladaptive emotions, is a rather central goal for a lot of therapeutic interventions. That is, the person needs help in making better operant choices.

An important part of my argument, which I sketched out in a has-almost-never-been-read item in the Commentary section of the *American Psychologist* (Caldwell, 1994), is that all psychological reactions simultaneously include both operant and classically (or respondent) conditioned components. In fact, I think the structure of the central nervous system is so assembled; that is, the cortical networks are organized to reproduce complex images, to elaborate chains of verbal meaning, to image sequences of possible choices, and so on. The often-columnar organization of parts of the limbic system is coordinated to simultaneously provide the affective coloring and regulated intensity associated with whatever imagery is being cortically processed.

The point of all this is that we have much too readily dismissed classical or Pavlovian conditioning, or respondent learning, as somehow simply reflexive and, therefore, of secondary importance; we have treated it as being of less interest, if not almost trivial—a sort of baroque basso continuo repeating very simple melodies. In fact, every single response of the central nervous system simultaneously involves both complex imagery and affective tone, both cortical and limbic arousal, and both operant and classically conditioned components. The cortical and subcortical structures are highly interconnected; neither can ever be significantly activated with an absence of arousal in the other. The operant-classical differentiation is very meaningful in our research designs (e.g., an application of one or the other paradigm is used in virtually every study in the *Behavioral Neuroscience* journal), but despite the singular research focus, one or the other alone is never how our brains operate.

These parallel functions can be represented in a 2 x 3 table (see Table 1). This table is, of course, a gross oversimplification, given the extraordinary complexity of the central nervous system and the myriad specificities of all the different locations within it. The table is intended, in a schematic way, to trace the correspondences of function among the overall regions. Explanation is that, within the ladder of the sciences, each level is strongly explanatory of the next higher level. It should be noted that the outpouring of data in journals such as *Behavioral Neuroscience* can be seen as pinpoint explanatory of a great range of operant and classically conditioned outcomes. What is notably missing, and a central point of this lecture, is the limitations of our present understanding of the conditioning of affect and especially the shaping of psychopathology on a simultaneously operant and classically conditioned basis. Our comprehension as to how subjective

awareness is coordinated with simultaneous operant and classical influences is much in need of development.

The table emphasizes that the conditioning of emotional arousal essentially operates by contiguous association, and it is not voluntary even while our cerebral cortices are effectively functioning under operant constraints. Our emotional feelings are the subjective, limbic component of every response, but we do not will our emotional states. We can willfully arouse or inhibit our emotions only to a limited degree through biofeedback, and that only *when the emotional stimuli are not overwhelming*. The point here is that the learning and extinction of emotional arousal are effectively following classical conditioning constraints even as the cortex is simultaneously subserving operant learning and voluntary decision making. At times, the reiteration in therapy of an accurate and already-clarified cognition may well be needed to weaken or significantly extinguish the associated affective/respondent/limbic arousal component. The most potent and fear-arousing images need to be identified and expressed explicitly or otherwise extinguished.¹

TABLE 1
Levels of the Two Parallel and Integrated Systems

<i>Level of Scientific Discourse and Explanation</i>	<i>Higher Function</i>	<i>Emotional Modulation</i>
Subjective awareness	Complex representation: Imagery and cognitive elaboration	Affective arousal and inhibition: Awareness of attraction-repulsion
Learning	Operant responding: Sequences and choices	Classically conditioned output: Approach-avoidance
Neuroscience	Neocortical activation; Multisite representation	Limbic governance: Quantitative regulation

Now, with these seemingly digressive, but I believe vital, notions in mind, let us look at the shaping of psychopathology as *adaptive responding*. As anyone who knows

¹ Perhaps the disruptions of the affective/respondent/limbic arousal while voluntarily focusing on the maximally aversive images would help explain the eye-movement desensitization phenomenon

me is well aware, my thinking is greatly influenced by my almost 50 years of dedication to the Minnesota Multiphasic Personality Inventory (MMPI; Hathaway & McKinley, 1943). So, I am sure, to no one's surprise, I proceed from the MMPI as my point of departure. For openers, my proposal is that the eight clinical scales on the MMPI—and the scales on the MMPI-2 (Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989) are the same—each can be conceived as a dimension of fear learning and associated avoidance conditioning. I consider the eight clinical scales in their profile order. I have a diversity of scattered data points to support these hypotheses, but reviewing those would carry me far beyond the available time. Therefore, I present what follows simply as a series of hypotheses yet to be examined and tested, based on my experience and especially my own attempts to understand what drives MMPI scores up and down over time.

HYPOCHONDRIACAL CONCERN

The first scale reflects, of course, an increasing—and at the extreme an almost total—preoccupation with the status of one's physical health. The overlapping psychiatric labels of *hypochondriasis* and *somatization disorder* are intended to identify the more severe instances of somatic complaints that lack any identifiably sufficient medical basis, although I would stress that the scale measures a person's level of somatic attention and preoccupation but it does not rule out organic disorders. One can be sick *and* preoccupied, and ambiguous disorders are much more threatening than those that are clear-cut and transitory. Note how we tend to find someone's endless recitation of health items disconcerting or perhaps annoying. We call it self-defeating because of the alienating effects, that is, being avoided by others (perhaps including ourselves) who are not comfortable listening to an unboundaried enumeration of illness concerns. Thus, in our clinical wisdom, we judge such behavior to be maladaptive. But let us return to the application of Starke's question: To what events and circumstances can the development of an attention-dominating health orientation be adaptive?

Years ago I evaluated an electrician in his 60s who, in good health at the time, had been working on billboard wiring about 25 feet up above rock-hard dirt. There had been an electrical short, and the current flowing through his body froze him in a

conscious but immobilized tonic state, rapidly destroying the tissues of his body, a progressive death by electrocution. A fellow worker threw a switch and my man catapulted backwards, coming down head first. My neuropsychological testing was (surprisingly) negative even though there had been three cervical fractures. In the interview, a single brief and oblique reference to the billboard set him trembling for about 5 minutes, even though he instantly changed the subject and we did not return in any way to the image. His wife described how, over the year since the accident, he never left home without her, and then almost exclusively to go to doctors; he sat on the lawn to pluck weeds; and he would not get up on a low step stool to reach a high shelf even though he was tall and she was short.

Points to note in that sequence: Observe the potency of the emotional, that is, limbically modulated, conditioning. The moment I made a single reference to the billboard, he instantly began wringing his hands, and then they just trembled, even as we went on talking about unrelated material. Note also his avoidances of the slightest elevations above ground. Most of his time was spent lying in bed or reclining in an easy chair. I believe that for him, with his towering *Hs* score at about 110 and clearly highest in his 1-2-3 coded profile, trips to his doctors were occasions of reassurance, to be told that whatever was his latest concern was *not* life threatening, that with some mix of rest and at least a little exercise he would eventually be fine. His desperation for the anxiety reduction of such medical reassurances clearly overrode the costs and inconveniences. The recitation of somatic distresses constituted an indirect and hence inefficient discharge of his associated tensions; the subjective anxiety of the event itself, the limbic arousal that was concomitant to the visual and verbal images of the shock and fall, was far too intense for him to voluntarily engage directly.

The concept of sensitization enters here in a vital way. Once traumatized, that is, sensitized, we will do just about anything to avoid reexperiencing whatever was the worst moment of our lives. Fear is highly survival-adaptive in keeping us from ever again risking that danger. Hence, for my man *any* subsequent bodily discomfort immediately became a danger signal, "Get me to a doctor," its potency deriving from the occasion of overwhelming terror and anguish when he lay on the hard ground disoriented and badly injured but *not* unconscious. Whatever sensations, cues, stimuli, and so on, that corresponded to that occasion of terror would then trigger a protective alarm, lest the new

or further damage to his body go from bad to worse. And the intensity of such terror would lead to very wide generalization gradients, including any discomfort in any part of his body.

To wrap up Scale 1, *Hs* or Hypochondriasis, I believe the shaping occasions to be moments of acute fear as to the security and integrity of one's body. Injuries and illnesses that are *both* (a) debilitating or incapacitating and (b) progressive and life threatening are maximally powerful. In these circumstances an increase in attention to one's physical status is *adaptive*; it becomes an adaptive pattern of responses to be readily alert to and protective against any threats or risks of further damage or decline. In that context, being hypochondriacal becomes a positive and survival-protective adaptation.

The clinical problem with *Hs* (as well as the other clinical scales) is to identify when past traumatic experiences or sensitizations have left a level of concern that is above and beyond current survival needs. Extinguishing the excess of conditioned emotional arousal is then a key part of the therapeutic process and how we help bring the scale elevation back down. In this process, we need to monitor carefully how our using or even thinking in such terms as *self-defeating* and *short sighted* in fact typically identifies circumstances in which the urgency of immediate tension reduction overrides the person's concern over the longer term consequences of the action; the avoidance gradient overwhelms the approach gradient. We must keep in mind the great power of fear: When it is activated, it easily overwhelms our anticipation of adverse longer term outcomes.

The treatment of somatic preoccupation is missing from most psychotherapy manuals. Such clients are often perceived as "lacking in psychological mindedness," which I believe to derive from a fear that the engagement of emotional material would itself be potentially damaging to the body—"When I get upset, my body goes haywire"—fear that may well be carried over from a valid experience during a period of relatively acute illness. Maximizing the encouragement of whatever physical activities the person finds pleasurable may help, especially if in concert by all who care about the person. Reimagining the frightening moment—for example, my man lying badly injured on the cold, hard dirt—would seem to have a potential for reducing the fear level associated with the event, but that would obviously take considerable skill and a lot of support. Such approaches clearly need careful exploration. I believe each of the eight clinical scales has

its own complex of sensitization and associated avoidance gradients. Having laid out these basic concepts, I will now go summarily through the other scales and lay out what I believe to be their associated traumas, fears, and avoidances. Then I will comment on them as Hathaway's catalog of remarkably fundamental survival-protective adjustments.

DEPRESSION

The second scale is, of course, Depression, so the next question is, to what is depression an *adaptive* reaction? What is still worse than depression that it has to be avoided at such a price? To answer the question with a question, what if a person were to lose something vital to his or her very being, a tragic and irretrievable loss? I personally have always enjoyed good general health. What if I had a bad car accident, and my health and mobility were severely impaired for all the rest of my life? I always seem to be reading something. What if I were to become blind? (I offer that example because I have suffered a scary reduction of vision in one eye.) What if one of my children were to die or one of my two beautiful grandchildren? What if the key people on whom I depend for social support in some way all exited my life? How would I adapt to permanent losses of such emotionally vital parts of my life?

I think the depressive adaptation involves a major inhibitory element, rather like mitigating anguish by spreading it out over time. The extreme, of course, is for the whole system to go into a motor- and mind-retarded state. In this way, the impact of the heartbreaking losses and associated deprivations of positive input are diminished; they are distributed over time. When I have suffered the permanent loss of something vital to me, I think possibly the greatest danger is the renewal of hope, lest I suffer yet another loss and my heart and my will be forever broken. Thus acutely sensitized to losses, I am likely to start asserting pessimistic statements: "I don't care any more," "It doesn't matter," "Nothing ever works out right for me." If I have no hopes, I will suffer no more losses. To get my hopes up and then to have another major loss, that would be more than I could bear. It is much safer to reiterate pessimistic expectations than to have my heart forever broken. Thus, defining *loss* broadly, I hypothesize that depression is in fact the positive adaptation to perceived vital and irretrievable losses.

I think the treatment of depression can naturally follow a Hegelian dialectic. The first step, the *thesis*, is to say goodbye actively and vividly to what has been lost. A woman was instructed to bring her favorite pictures of her daughter, who had burned to death in a trailer fire, and, having brought them, to place them on a coffee table in front of her. She was then told to start saying goodbye to her: active, focused weeping. The second step, the *antithesis*, is to find points of anger, even if rage at fate for having to suffer so much or in such a way, anger at the firetrap nature of the trailer, or perhaps even rage at the very flames. This is the recovery—or rediscovery—of energy; note the polar opposition of the inhibition of depression with the energy of anger. The third phase, the *synthesis*, is the exploration of new, alternative sources of personal gratification and pleasure, of positive rewards, to replace what was lost. She put away her daughter's furniture (which was still exactly as it had been the day the girl died) and made a sewing room that she needed out of the bedroom. Note the importance of guiding both the images and the pacing of the affect through such a sequence.

CONVERSION HYSTERIA

Regarding the third scale, what is the adaptation to stabbing, crushing pain, whether of physical or interpersonal origin, that is, of extreme, somatically experienced anguish? I think the answer divides into two distinct parts, just as do the items on the *Hy*, or Conversion Hysteria, scale itself. One part is an acute sensitization to any kind of pain, emotional at least as much as somatic. Fear can greatly reduce pain tolerance, even though it does not directly increase the perception of pain intensity, so that frightful pain becomes a powerful "grabber" of one's attention. In effect, the system becomes sensitized into maintaining a high level of vigilance to protect against any new onslaughts of overwhelming pain. Once acutely sensitized to pain, the person is seen as reporting bodily pain and other distressing sensations either more intensely than pathophysiology would anticipate or at the extreme in the absence of any evident physical source.

The second part, as is so directly reflected by the items in the *Hy*-Subtle subscale, is the interpersonal avoidance of occasions of emotionally painful input and the urgent need to be assured that there will be solace and care when you are hurting. Being a nice person, actively reassuring others, repeatedly vocalizing concerns over their welfare,

being enthusiastic, at times Pollyanna and consistently nonconfrontational, who could possibly hurt your feelings or coldly abandon you when you are suffering? Thus, if overwhelming pain is your worst nightmare, you protect both internally (the *Hy-Obvious*, or the somatic subscale) and externally (the *Hy-Subtle*, or the denial component of the scale).

Over time, nonacute and familiar somatic pain complaints can become habituated, and the person may be observed as looking less distressed than the verbalized complaints would otherwise anticipate. The reflexive shift of attention onto habituated and nonacute foci of pain, especially as such shifts are effective avoidances of imminently painful emotional input, is then a learning paradigm for the conversion mechanism. Distressing confrontations are evaded by the automatic—that is, respondently triggered—shifting of attention onto less distressing somatic foci. "I'd love to help you if the pain in my chest wasn't so bad," then gets said with a *belle indifferent* smile. His success of the avoidance is reinforcing of what soon becomes an automatic and thus not consciously recognized (i.e., unconscious) shift. Shifts of attention away from some acutely painful memory similarly become automatic over repetitive occasions, so that the memory eventually becomes inaccessible (is lost in one's unconscious?). Again note the reduction of affective/respondent/limbically governed distress in the reinforcement of the shifting of cognitive/operant/cortical images in the paradigm for repression. Denial would be the reflexive shifting of attention away from an immediately painful image, for example, "I hear your husband has not been here in the hospital to visit you?" "No, but aren't those the most beautiful flowers over there that Mrs. Johnson brought from that lovely garden she has?" Or, after a short hesitation on Card VIII of the Rorschach, "Those are such pretty colors! What do people see in them?"

I would like to add a secondary hypothesis: that if peripheral vasoconstriction is a person's most strongly reactive autonomic modality, I believe that person is, compared to others, much more vulnerable to pain-fear conditioning. Physiologically, emotional upsets are for him or her highly overlapping with physical injuries: In both cases, the system shifts blood centrally, withdrawing it from the periphery via capillary constriction. Therefore, for the strongly vasoconstrictive responder, emotional hurts are far harder to discriminate from bodily hurts and injuries and, as my pain-psychologist friend John Reeves (personal communication, February 1993) has observed, at the

extreme of *Hy* or pain-fear, the person can almost completely lose the ability to discriminate one source of pain from the other. I would be delighted to see some medical school clinicians collaborate with some physiologic psychologists in testing this hypothesis as to the predominance of peripheral vasoconstriction in patients with 13/31 coded MMPI-2 profiles, although in the long run the exploration of the central governance of such a vasoconstrictive predominance may be the most important aspect of all.

ASOCIAL AND AMORAL PSYCHOPATHY

I initially puzzled over what circumstances it would be to which psychopathy would be adaptive. In my eventual analysis, three elements have emoted as likely to be contributory. The first is unwantedness in infancy and early childhood and, I believe, very likely in utero. The second is a high level of conflict, tension, and general stress in the childhood home (or again, during gestation). The third is a genetic vulnerability. Scale 4, *Pd*, had the strongest genetic loading of all 13 regular scales in the Minnesota twin data (DiLalla, Carey, Gottesman, & Bouchard, 19%), a striking 61 % heritability. What the mechanisms may be is not yet known, although past data (e.g., Hare, 1972; Lykken, 1957) have suggested a specific deficit of galvanic skin response (GSR) responding. My hypothesis is that the fight-flight benefits of the GSR are specifically associated with anticipatory arousal and that our consciences depend on emotional anticipation, that is, emotional arousal to the images of the outcomes of different lines of behavior (e.g., to take a gun and go point it at the chest of a liquor store clerk). Some quite recent data (McBumett, Lahey, Rathouz, & Loeber, 2000) suggest that lowered levels of cortisol are involved in conduct disorder, which is the early expression of what the *Pd* scale measures at later teen and adult ages. This last is consistent with earlier animal research that suggested that gross traumas could produce prolonged reductions of diurnal cortisol levels in rats with possibly an oversurge when they are aroused.

Suppose, then, you are a small child, never wanted by either of your cold parents, in a hostile, conflicted home. No one cares about your survival, whether you live or were somehow gone or just dropped dead; that is, no one bonds with you, and you hardly bond with anyone. The home is always a dangerous place, with family members who are

repeatedly involved in various manipulations or risky scams. Your underaroused and non-GSR-responsive system just gets more and more turned off. How are you going to develop warm and deeply loving relationships as an adult? To hell with that, caring about someone is how you get hurt. Life is just a drifting from one brief moment of feeling alive to—eventually—another with lots of tuned-off boredom in between. Congratulations, you have adapted!

The genetic component would then predispose an increased vulnerability to experiences that dampen such arousal markers as the deficient GSR responding and lowered cortisol levels. The absence or limitation of substantial bonding in combination with the high level of stress in the home would thus maximize the long-term reduction of emotional arousal. The alternative (with a lesser genetic contribution) would be a "burnout" sequence in which caring only gets one hurt again if not still more deeply since you "should" have seen it coming and never let yourself care in the first place. The widely prevalent complaint of boredom is the subjective report of the emotional turnoff, and occasions of excitement seeking are the momentary compensations for the prolonged dead periods. This turning off is not a conscious decision, obviously not in the infant. However, to feed back the client's own words, "When we had that fight, that was when I knew the marriage was doomed," and "When the boss blew up at me that time, I knew I wasn't long for that job," can prompt the client to recognize points in time when he or she ceased to care. Thus, when confronted in therapy with the turning off of caring as a personal adaptation, the moderately "high 4" client is surprisingly able to appreciate what is happening. Within life-circumstantial limits, the person can gradually be taught to avoid the occasions that cause him or her to turn off.

THE PARANOID ORIENTATION

Considering Scale 6, the paranoid orientation, my hypothesis is that the most crucial emotionally shaping moments are occasions of the coercion of one's will, especially as coercive attacks on one's person or one's integrity more broadly. The histories of people with MMPI codes involving Scale 6 show a disproportionate frequency and/or severity of punishment in childhood associated with dangerously irritable tempers in family members (Chang, 1982). For example, Code 26 typically involves a martyred stance

around needlessly mean or cruel treatment; those with 36-coded profiles often suffered rigid and unforgiving moral judgments and humiliations; with the 46 code, the punishments are often uncaringly severe and harsh (note the fluency of having been beaten with a strap in Marks, Seeman, & Haller, 1974); and with the 86, or prototypic paranoid schizophrenic code, punishments seem to involve parental pleasure in beating the "bad seed" out of the defective child (note the frequency of having been "severely thrashed" in Marks et al., 1974, p. 230). To what, then, does the Scale 6 represent an adaptation? I think it is an acute sensitization to the slightest cues of anger in others, what are even very small hints as to the possibility of another attack or imminently coercive punishment.

This leads to a proposed redefinition of the mechanism of projection in learning terms. Rather than a kind of transferring of one's own hostility onto others, it is an intensified or acutely protective vigilance to any cues of hostility in others. The other person's annoyance may be so minimal that the second person does not even perceive himself or herself to have been angry or hostile, leading to a defensive blaming of the first person as "making it up" or as "just being paranoid." Although the perceived cues of hostility may be misperceived, I believe the sensitivity often becomes so high that the "paranoid" individual is picking up on valid cues that are so faint the other person frequently is not even aware of his or her split-second's touch of resentment.

Corollaries of this include the very literal honesty of the paranoid, which is keeping oneself above reproach and beyond any attempt to coerce one's will because of any identifiable attempt to deceive or in any way to mislead other people. It also can lead to a far-too-categorical classification of others either as always honest or as liars never to be trusted. Richard Nixon and Nancy Reagan both felt a need to stress that they had allies as well as enemies. The normal range elevations on Scale 6 among child custody litigants (usually in the absence of any explicitly persecutory item content) anticipates the inability to forgive and let go. Once the ex-spouse is transferred from the beloved category to the never-to-be-trusted cell, then all actions are seen through the filter of threat to the autonomy of the litigant's will and dangerous insult to the person's social role. The dissonance-reducing fixation of these perceptions is then the blocking of the ability to forgive and forget. But note how the theme of perceived danger of will-coercive attack permeates all of these circumstances.

OBSESSIVE WORRYING

The central adaptation I propose to be associated with the obsessive worrying scale, Scale 7, or *Pt*, is a conditioning of the orienting response. My hypothesis is that repeated and sharply distressing occasions of being unexpectedly startled or experiencing unpredictable emotional shock will produce an increased frequency of spontaneous, low-amplitude orienting responses; that is, the system is always a little bit on the alert. This rate has been shown (Greene & Sutor, 1971), for example, to be capable of marked increases in circumstances where, firstly, repeated orienting responses led to sustained music without uncomfortable interruptions and then, in the contrasting condition, orienting itself led to interruptions of the music. When the discriminative visual cue was that orienting would avoid the interruptions, the rate of low-amplitude, spontaneous orienting showed a very large increase. In debriefing, however, subjects were essentially unable to identify what was going on internally within their bodies.

An important part of obsessionality, then, is an interference with the ability to keep one's attention focused on the task at hand. Minor or even trivial stimuli elicit orienting responses that repeatedly interrupt steady task attention. Protective orienting also keeps shifting one's attention onto potentially adverse turns of events. This leads to intrusive thoughts about possible mistakes and misfortunes as well as nonspecific things going wrong. Note that all of this constitutes a pattern of keeping oneself ready to modulate the onset of some unexpected shock. This readying is in turn intermittently reinforced by occasions when a prior preparation of attention for an actual upsetting adversity did have a dampening or muting effect on the onset of distress. When a person has suffered too many shocking and startling events, the system adapts by repeatedly readying itself for any other unpredictable onsets of distress.

Among the oddly specific prior events that have been noted in the early experiences of obsessional cases (e.g., the 78 code-type description by Gilberstadt & Duker, 1965) are childhood histories of cruel teasing. Cruel teasing is typically characterized by unexpectedness, such as when someone jumps out at you or something quite startling is done, and the person becomes persistently alert to avoid letting such

experiences be repeated. I would add severe tickling. For example, when too much tickling becomes acutely distressing, note the extreme intensity of orienting responses, a sort of escalating panic over what is happening to you and how to escape it. In summary, Scale 7, or *Pt*, is thus hypothesized to reflect a systemic adaptation, always clinically paired with some other scale or scales that inform us as to the focus of the orienting. The adaptation is that the system will do whatever it can to avoid or mitigate the repetition of such moments of acute distress.

MENTAL AND EMOTIONAL CONFUSION

Scale 8 is labeled *Schizophrenia*. Elevations on this scale are hardly limited to cases of genetically or constitutionally disposed psychological deterioration, however much those were effectively the target of Kraepelin's original classification of dementia praecox. Elevations occur on Scale 8 from a wide variety of sources, from neuropsychological impairment to recent intoxication to histories of sexual abuse in childhood or family dislike that was devastating to the child's self-esteem. I prefer to think of Scale S as a measure of mental and emotional confusion. Only a quite small part of the item content is suggestive of hallucinatory experiences or delusional beliefs. Most of it is about deficiencies of attention and memory, peculiarities of interpersonal experience, undermined personal initiative, undirected restlessness, strange bodily sensations, and generally negative attitudes toward oneself.

I would propose that dislike of one's identity or very existence, especially coming at an early age from your mother, father, or both, is an incomprehensible and deeply damaging circumstance. One internalizes a sense of defectiveness and of being interpersonally out of synchrony with others; you know you are damaged goods at best even if you have no understanding of how or why. You know your life is screwed up compared to the lives of those around you, but nothing can ever make it right. People dislike you or even continue to hate you for no clear reason, as they always have. How does the person adapt to such a life experience?

There are, of course, a variety of different ways to adjust, as are reflected in the diverse MMPI codes involving Scale 8. If your childhood was almost always one of

deprivation of affection and absence of positive rewards because your mother found you utterly unlikable and gave you nothing, you may sink into an apathetic, nonachieving depression; your MMPI code (e.g., modal code across retestings) is apt to come out 28 or 82. Being ugly or disfigured and having an easily provoked but ineffective temper are no help. If, at an early age, your body was the object of someone's sexual gratification, someone who was cold to your distress or—worse yet—excited to greater sexual aggression by your pleadings that he or she stop, you end up deeply alienated and knowing yourself to be permanently damaged goods. Your modal MMPI would most likely code as 48 or 84, becoming 248 in suicidal phases, the elevation on 4 coming from the cold indifference to your distress and the 8 from the cruel defilement. If you are grossly attacked for your intrinsic defectiveness and never-acceptable behavior and one of your parents enjoys thrashing the evil spirit out of you, you may "go 86," which indicates an adaptation of letting no one ever get close to you with your mind struggling to manage ever-changing attributions as to people's motives and the hidden meanings of their actions, so that others keep telling you that you are crazy. Maybe you don't even finish sentences the same way they do.

Note that these outcomes are nevertheless adaptations to more or less extreme circumstances. If people leave you alone, fewer inexplicably nightmarish events happen to you. If your caring about what happens to you has been shut down by nongratification, degrading attitudes toward you lose their impact and may cease to be distressing. If you still have a high level of internal drive, for example, MMPI codes 98 and 489, perpetrating cruelty and violence may be gratifying through tension reduction or may simply be one of the few times when you have a lively feeling of importance. When is crazy behavior adaptive? When it blocks out a world that has consistently given you hostile and incomprehensible input. Whatever the genetic or biologic dispositions when we someday fully understand the behavioral potentiators of the human genome, I think they basically increase the vulnerability to such traumas; they make it harder to comprehend hostile input and to make sense of senseless experiences. If, for example, the normal columnar structure of your anterior hippocampal neurons is grossly disorganized (Conrad & Scheibel, 1987), then the more traumatic an event, the more incoherent are whatever memories that do get stored. It is the interaction of the genetic vulnerability *with* the traumatic events that becomes the learning history to which schizotypal or overtly schizophrenic behavior is adaptive.

MANIC EXCITATION

I hypothesize two factors as primary contributors to the manic adaptation. The perhaps more clearly delineated factor is the biological effect, particularly including low levels of lithium with resulting surges of excitement and arousal. When "all the data are in" at some future date, it may well be that other neural elements, such as disrupted prefrontal executive functioning and other aspects of the organization of brain functioning and neural irritability, also very much influence the expression of such phases of extreme arousal.

The second factor, which I believe to be the learned, or perhaps "conditioned" half of mania, is less well defined. My hypothesis here is that there is an adaptation to occasions of severe or overwhelming devaluation. How does a high-energy kid adapt to a crushing explosion of criticism from, say, his or her mother? He or she is likely to accelerate his or her running around and doing things. If, for example, the child's activity distracts attention away from a maternal focus on the child's categorical and loudly announced failure, then patterns of distracting attention are strongly reinforced by the ensuing reduction of tension. I think the assertion of optimism also gets strongly and repeatedly reinforced. Consider how much reiterated—and perhaps loud—assertions of doing better, getting done what Mommy wants, making everything work out wonderfully, and so on, blockade devaluation. As an aside, note how the assertion of pessimism is adaptive in depression, as it blocks hope and the danger of still more devastated hopes. The assertion of optimism is equally adaptive in mania as the blockade of still more crushing occasions of the rejection of one's basic worth.

SUMMARY

Let me summarize these eight fundamental dangers to personal integrity and identity, if not physical survival itself, before I go on to look at a few potential ramifications. Note the wide range of basic threats to which the organism may have to adapt:

1. Bodily injuries and illnesses that are debilitating and life threatening.

2. Losses that are vital to the person and that are permanent and irretrievable.
3. Physical pain and suffering that are overwhelming and without solace or reassurance.
4. Growing up in a context of not being wanted by anyone, with high stress and, most potently, with a physiologic system in which arousal is easily adjusted downward if not effectively turned off.
5. Occasions of attack on one's person and especially attacks that are coercive of one's will (from Scale 6).
6. Recurring unpredictable occasions that are deeply shocking or frightfully startling (from Scale 7).
7. Experiences of dislike or hatred of your identity and very existence from the same individuals on whom your survival depends (from Scale 8).
8. Occasions of crushing devaluation and impossible expectations, especially as they come down on an already-aroused and activity-pressured makeup (from Scale 9).

Starke Hathaway was hands down the most extraordinary inductive thinker I have ever known. My next question is: Did he—in his amazingly shrewd observational wisdom and keen ear—somehow define a series of truly elemental dimensions of human survival? Did he somehow identify eight fundamental domains of survival—fear learning and protective avoidances? I perceive what he evolved as in deed being a catalog of threats to the survival of the individual's self-systems or of the organism itself: body breakdown, tragic losses, unbearable pain, callous coldness, coercive attack, sudden panic, bewildering hatred, and crushing devaluation.

Given the large genetic components of each of these eight dimensions (DiLalla et al., 1996), which range from 26% to 61% of the respective variances, and with substantial genetic loadings even on the Subtle-Obvious scales and the Harris-Lingoes subscales within these dimensions (DiLalla, Gottesman, Carey, & Bouchard, 1999), I obviously believe the creation of the MMPI was truly a stroke of inductive genius. I find it easy to speculate that the protections against these are in varying degrees "built into" the system; they are survival dangers tracing a long way back through the evolutionary or phylogenetic tree. I once observed a major depressive episode in a pet dog following the tragic death of his mother: inactivity and psychomotor slowing, disturbed sleep, the loss

of thirst and a complete loss of appetite, greatly reduced social responsiveness, and so on. These textbook behavioral changes dissipated with time and affection.

EMPATHY AND FEEDBACK

An unexpected benefit of understanding the scales in this way is the increment in empathy for the individual. If the expressions of psychopathology can be comprehended as positive adaptations to *some* danger or other, then we can begin to see them as understandable acts of desperation to limit suffering and protect survival. As an oversimplified example, suppose you are asked by a person with a high peak on the *Hs* scale, "Doc, what did those darned test results show?" Hypothetically, the traditional answer could be something like

Well, it shows you are a hypochondriac. You complain all the time about your health. You probably go to a bunch of doctors when nothing is wrong, regardless of the cost. You get other people to take care of you. I'll bet you just want to lie in bed or sit and watch television while others do all the work.

How much of that could the person hear? Surely it would all be rejected. Suppose instead, from a survival-fear point of view, the person were told

Your answers to the test reflect a lot of concerns about your physical health. I think you are probably spending a lot of energy taking care of it. We see this happening when the person has had some very difficult health problems and especially if those illnesses (or injuries) were life threatening, like they might only get worse and worse, or that the person could die from them. Of course, this makes the person want to take care of his or her health quite carefully. Does any of that fit you?

Even that much might be a heavy dose all at once. But note how much more of it could be meaningfully heard by the person. Parallel thinking then applies across the rest of the eight scales in terms of both understanding the individual and as to ways to give the person feedback. Even what we are prone to call *self-defeating behaviors* or perhaps privately label as *neurotic stupidity* can be understood in terms of the short-term escape from fear, that the immediate need to escape anxiety overrides the damage to or defeat of longer term goals.

To summarize, as I argued in 1994, I believe we are moving toward a point where all psychological events will have to be considered at multiple levels simultaneously; that is, every psychic event has a behavioral/learning aspect, a neurophysiologic substrate, and its associated subjective or phenomenological awarenesses. For research design purposes we must at times fragment these; just as we may study operant *or* classically conditioned learning, we may distinguish affective states from logical-analytic cognitions, and we differentiate elements of limbic from cortical functioning. But no psychic event is without *all* of these elements. I believe the integration of these in terms of how the organism has evolved to maximize survival, that is, the evolutionary explanation of psychopathology, will then lead us to ever more complete ways of understanding our clients and to ever more effective interventions.

AUTHOR NOTE

This is an edited version of my Master Lecture read at the Society for Personality Assessment Convention, March 24, 2000, in Albuquerque, New Mexico. A much more detailed coverage of this material is available on audiotapes from *Caldwell Report*, a recording of a series of 10 workshops based on my 11-month MMPI/MMPI-2 seminar at University of California-Los Angeles.

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