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**THE
PSYCHOBIOLOGICAL
APPROACH**

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THE PSYCHOBIOLOGICAL APPROACH

Wendell S. Muncie

Adolf Meyer^[1] (1866-1950) coined the term “psychobiology” to refer to a science of man which conceived that biography, with its mental functioning, was as truly biological as was physiology. Such a view naturally led to two further assumptions: (1) that the living man can only be studied as a whole person in action,^[2] and (2) that this whole person represents an integrate of hierarchically arranged functions. Psychobiology offers a theory of personality organization and activity, and an attitude toward the approach to treatment of abnormalities of personality.

The fundamental concept of psychobiology is that of integration. According to this concept, man is the indivisible unit of study, but this study can be approached from any of a number of hierarchically arranged levels: the physicochemical, the reflex, and other physiological systemic levels, and finally the psychobiological, that is, the activity of the whole person, as an item of biography, using economizing symbolizations binding together past, present, and future anticipations. This symbolizing activity, referred to as “mentation,” is a specifically and characteristically human activity. The facts of any level of integration are included in the activity of the higher levels and are necessary for the complete understanding of the latter, but the facts of any level of integration are not to be understood as a summation of terms of

the lower levels only. Briefly, the whole is greater than the sum of the parts. The activity at any level may be altered by change at either a higher or a lower level. This total activity of the individual may be sampled at any given time as a cross-sectional picture of the personality, or the personality can be studied longitudinally as a time-bound and changing phenomenon.

The old problem of “What is consciousness?” is replaced by the concept of mentation as a variety of action at the highest integrative level with varying degrees of perfection or completeness.

To complete the theory, the person-as-a-whole concept of necessity includes man in his society as a part of the whole. The study of the individual then inevitably merges with a study of his society, including the workable and less workable aspects of each item. Furthermore, the facts of human biology and societal structure force the attention for dynamic purposes onto the relationships (and attitudes) inherent in the child-family combine. There is abundant evidence, from normal as well as abnormal histories, of the lasting power of early acquired attitudes and the need for subsequent struggle to modify them.

These concepts are so simple and appear so self-explanatory that the scientific reader might be excused for expressing impatience with them for their simplicity and for their lack of any definition or rules as to “where to go

from here.” Meyer himself never supplied, or attempted to supply, detailed rules for the further amplification of study methods (except in regard to special topics of interest to him, such as schizophrenia, paranoid states, and the neurotic constitution). He stressed the selection of topics as the most vital job confronting the worker in this field. History shows how the selection of topics has changed in emphasis from one generation to another. And in no case can it be said that the topic has ever reached an exhaustive and authoritative working through.

To return to the simplicity of the concepts of psychobiology, let no one be misled by this appearance. There is no harder discipline to apply than that of working with holistic concepts; and perhaps none is less gratifying, because the gaps in knowledge are so omnipresent and glaring. It is no accident, therefore, that many scientific workers declare themselves “holists” but think and act otherwise, as psychophysical parallelists, or atomists, or other adherents of part-function philosophy.’

The significance of all this for treatment lies in the following facts:

1. Treatment rests on a sound view of the longitudinal behavior of the individual in his social setting, and in its precise sampling at any time in cross section. This has meaning for the matter of history taking.
2. Treatment may be instituted at any level of integration which can

be shown to be involved in the origin of disorders of total functioning. This leads to multiple attacks on the most diverse problems in treatment, for example (a) simple psychotherapy as well as chemical attack on bromide delirium or (b) electroshock treatment as well as psychotherapy in depression.

Form and Content and Their Interrelations

Meyer often remarked that there seemed to be but a few ways in which people could react. This underscores the clinical fact that the diversity of life experience must finally be channeled into only a few varieties of behavioral expression, determined by the facts of biological personality organization. The emphasis in psychobiology, from its outset to the present, has been on the effort to elucidate the interrelations of life experience, objectively and subjectively viewed, and their biological means of expression. Actually, this means an effort at synthesis of the statistically valid descriptive generalities of mental disease (form) and the dynamic aspects (content) imparting meaning (that is, plausibility). This is that search which “psychosomatic medicine” has appropriated peculiarly to itself but which applies in all psychiatry if, indeed, not in all medicine.^[3]

Common-sense observation leads to the conclusion that dynamics cannot be equated with causation. Meaning in illness may play a leading role or may figure in an incidental sense only. It cannot be said that a wholly

satisfactory synthesis of form and content has as yet been achieved in regard to any mental illness type, because of the inherent difficulties in the problem.

The facts of form were well, if not exhaustively, described by the early writers, culminating in the Kraepelinian systematizations. They deal with the phasic qualities, the tendency to recover versus the tendency to chronicity, to deterioration, with hallucinations, thinking disorders, disorders of affect, disorders of the body-image, and so forth. Yet there is considerable evidence for the belief that these items of form are themselves to a degree subject to cultural influence (content). This seems to be true after allowance is made for changes in “fashions” in diagnoses.

The forms of illness determine certain well-known content items and treatment necessities. For example, deep depression may be assumed to be associated with suicidal preoccupation and to demand adequate protection for the patient. Likewise, catatonic stupor assumes a pathological passivity and calls for caution in tube feeding.

Psychotherapy attempts to change the form of illness by attacking the content. Physical therapy—including the various forms of shock treatments and the use of stimulant, sedative, and tranquilizing drugs—attempts to change the content of illness through attack on the form. The shock treatments, to whatever degree they are justified through their pragmatic

usefulness in shortening serious depressions and manic excitements or in ameliorating schizophrenic states of withdrawal or paranoid distortion, have left with many observers a note of regret at the massive shotgunlike attack, with a virtual dearth of intelligent understanding of their modes of action. We come somewhat closer to pinpointing our attack through modern chemical methods. The present rapidly developing selective psychopharmacology will eventually have to rest on sound knowledge of brain anatomy and physiology. At the moment, this is our best hope for attack on the “final common pathways” of form in the major “functional” psychoses.

It cannot be too often reiterated that the physical treatments are administered by people to people, and the full and final effect of the treatments will bear the imprint of the working relationship between them. In general, the physical treatments should be administered only when the ground has been prepared for them through demonstration by the patient of his belief in the physician’s grasp of his problem. Under such conditions the treatments become a direct extension of the physician’s influence in the situation.

Psychobiological theory interposes no objection to combined physiotherapy and psychotherapy. Accurate analysis of the factors at work should determine what treatment method should be the leading one and which one should serve in a more accessory capacity at any given time. All

treatment has for its goals: (1) positively, the realization of that best potential of which the patient is capable, or at least willing to accept or to attempt; and (2) negatively, the avoidance of the introduction of factors that would leave the patient less able to deal with his life situation.

Treatment as Negotiation

In rereading Meyer's contributions to psychiatry, one is struck by the few discussions of detailed treatment methods.^[4] The most vivid memory I have of his attitude to treatment does not appear in his collected works but derives from a statement made in a staff meeting late in his tenure at the Phipps Psychiatric Clinic. As I have reported this elsewhere, it was substantially as follows: "The patient comes with his own view of his trouble; the physician has another view. Treatment consists of the joint effort to bring about that approximation of those views which will be the most effective and the most satisfying in the situation." This struck me forcibly at the time, for it laid down what, I recognized, had been our established working method at the clinic, but which had never been so aptly stated.

This succinctly asserts a cardinal principle: Treatment is a matter of negotiation of viewpoints and attitudes. This discards immediately old authoritarian views of treatment and uses, instead, mutual education through the elaboration of the material of the history as well as the working

relationships existing between patient and physician to enlarge the area of negotiation. This view of treatment to me appears so basic, so elemental, and so self-evident—like much of Meyer’s wisdom—that one can hear oneself saying impatiently, “Yes, of course. Now how to negotiate?” (That is, “How about the techniques?”) Meyer was always interested in techniques, but he seems to have held the conviction that the great failures in psychiatry resulted more from a failure in basic attitudes than from a failure in techniques. Otherwise stated, if the basic attitudes were firmly established, every practitioner could be expected to develop, in time, those techniques commonly in good repute and to add his own variants depending on his own assets (and needs). Consequently, trainees under Meyer ended with the most diverse technical equipment, but all were touched to some extent by the simple basic elements of treatment as noted above.

My observations over the years lead me to conclude that the concept of treatment as negotiation is basic for the best effort. I see this confirmed daily both in its observance and in its breach. Negotiation implies mutual respect and a willingness to give a sympathetic hearing to the other. It is especially the obligation of the physician to rid himself of any sense of justification for coercion which might arise from superior knowledge and faith in techniques. It is a humbling thought that, in some ways, the patient always knows more of himself than we ever will. If we can help in a more useful assembling of this self-knowledge, we will have served our purpose. The phrase “more useful

assembling” has a certain teleological ring. We should not shrink from this fact, nor does its acknowledgment entitle us to any of the perquisites of omnipotence or omniscience.

To be condemned are enthusiastic parochially tinged injunctions to therapy addressed to a patient in no wise prepared for such well-meant advice. Treatment starts and ends with what is possible, and tries constantly to enlarge the area of the possible through patient understanding of the problem and communication to the sufferer of this expanding view, with the need for encouraging a greater participation on his part in an expanded goal. As purveyors of a service to sufferers, we must recognize that the patient has the inalienable right to determine the degree of his participation, and summary interference with his freedom of action in this regard can only be sanctioned when clear danger to himself or others is evident.

History Taking

How to get a history and what to do with it to alter the course of events constitute the fundamentals of therapy. We must start with the assumption that for every patient his own story is of special interest to him. This is inherent in the fact that he is suffering in some sense. He comes with a certain view of his problem, deriving from his own background and what the problem means to him. He deserves and must be given the fullest

encouragement to develop the story as he sees fit and, in the process, to reveal progressively the motives at work as well as the form of the malady. The physician, for his part, must school himself to be a patient listener, and while the patient is talking and otherwise demonstrating his perturbation, must build up within his own mind a tentative view of the form of the illness and of its dynamic meaning, that is, of the items meaningful for provocation and continuation. The material then is sifted for the tentative allotments of etiology, and a “work sheet” of unfinished topics, or topics needing further elaboration, is set up. Subsequent sessions are concerned with filling in this material. This may be accomplished (1) by direct inquiry of the patient; (2) by use of devices for gaining access to material which, for adequate reasons in the preservation of the official version of the self, the patient has “forgotten” or relegated to a position of relative unimportance (using free association, analysis of slips of the tongue, dreams, daydreams, projective psychological test material)^[5]; or (3) by inquiry from relatives or others with a legitimate interest in the patient’s welfare. The material of (3) above is often absolutely vital to a full understanding of the case, especially in dealing with patients who act out in antisocial ways, but, more often, such material serves to arm the physician with a knowledge of specially sensitive items and to warn him away from brutal inquiry. It is good practice, in dealing with cooperative and voluntary patients, to secure permission for discussing the case with others. I do not mean that this must be a hard and fast rule, but in any case the

physician needs to be prepared to justify such a move to the patient.

As I work, this turns out, in most instances, to be a matter of conversation, face to face, while encouraging the patient to express himself freely. In practice I do not put the patient under the obligation to tell all that passes through his mind. I assume that the willingness or the desire to “tell all” is itself a matter of growth of confidence. Furthermore, I respect the matter of privacy, a right dearly won and even more sorely pressed for its preservation. Neither do I feel barred from initiating inquiry, holding myself in readiness to justify my moves at all times.

I use interpretation of motives early in order to call attention to the main purpose of our collaboration—to bring a degree of plausibility into the story, because therein lies the opportunity to get purchase on the matter of significant meaning. Primarily, I use material of the expanded history, from the present and the past, to illustrate the personality trait in question which is in action at the moment. I bolster this with analysis of dream material for the purpose of pointing out to the patient that the material of our conversations finds its spontaneous corroboration in his own productions, in a setting not so clearly open to his defenses and to my suggestive influence,^[6] I myself have never been able to see in dreams the superhighway to the understanding of personality. I reach my most valid interpretations from the analysis of historical material. But dreams offer the appearance of the

spontaneous, unrehearsed production that carries its own note of validity for etiology and current expectations for therapy.

These remarks apply especially to the treatment of the psychoneuroses. I have not found the dreams of depressed patients helpful in treatment; they offer only simple corroboration in the same terms as the waking moods and preoccupations or a simple wish-fulfilling fantasy of well-being. In the schizoid or borderline schizophrenic, dreams may be useful to gauge the degree of tendency to panic and disintegration, and they can be best used to warn the physician against probing analysis, unless it is accompanied by massive personality support.

In order to keep the treatment related always to the complaint, that is, to the terms of the present, analysis of historical material for motives and attitudes is constantly interwoven with factual accounts of current activities. This serves to keep the patient alert to the obligation to use now what he has learned of his habitual tendencies and the opportunities for change in them, and keeps treatment from degenerating into that endless situation that allows the patient to say, in effect, "I'll change some day when I have come to know all there is to know about myself." Treatment should be carried on in an atmosphere that expects change consistent with the current understanding, with sympathetic understanding of failure and with support and encouragement to retrial.

The frequency of contacts with the patient is determined by:

1. The need to establish a sense of continuity in the search for effective plausible understanding, both in the patient and in the physician.
2. The degree of anxiety or other turmoil (for example, suicidal risk). The greater the turmoil, the more frequent must the visits be.
3. Certain practical considerations deriving from:
 - a. Ease of accessibility.
 - b. Cost of treatment.
 - c. Case load of the physician.
4. A balance between the drive to develop a topic of inquiry and the need for time to elapse in which the significance of the development of the topic and data may be digested. On occasion, after a thorough working through of some aspect of the case, a prolonged therapeutic rest may be declared for the express purpose of discovering the patient's ability to put to use the new formulations.

History taking leads to certain conclusions about the severity of the disorder, its form, and the predominant mood and content. These items determine immediately certain practical points:

1. Does the patient need to be in a psychiatric hospital?

- a. Because of the suicidal risk, as in severe depressions.
- b. Because of the risk of asocial activity, as in manic states, paranoid states, etc.
- c. Because of the physical needs, as in stupors, deliriums, confusional states, organic syndromes.
- d. Because of the need for discipline and habit training, as in certain chronic schizophrenic states.
- e. Because of the need for certain physical treatments.

2. Can psychotherapy be the leading issue in treatment? This is the case in all neurotic states except the most severe, in the static personality disorders where antisocial acts are absent, and in the milder psychotic states of all sorts.

3. Can physical therapy—antidepressant, tranquilizing or sedative drugs, or electroshock —be profitably combined with psychotherapy? This will meet with diverse answers from many practitioners. Psychobiologists offer no theoretical objection to the combination, the decision resting on sound clinical judgment as to:

- a. The adequacy of psychotherapy alone.
- b. The degree of anxiety or other turmoil, that is, whether it is aiding or is impeding psychotherapy.
- c. Urgency for other reasons.

Treatment as Distributive Analysis and Synthesis

The central tool of therapy in psychobiological psychiatry was called by

Adolf Meyer “distributive analysis and synthesis.” The term attempted the description of the process by which the complaint was broken down into lines of inquiry (involving any integrative level and, of necessity, using the methods best adapted to study of the facts in question) combined with the attempt to reassess the factors at work in the form of alternative combination, that is, discovering alternative viewpoints and ways of working with more gratifying expectations.

The choice of methods to use in psychotherapy offers the widest range of variation. Meyer was not one to prescribe methods. His emphasis was on the use of any method in an experimental sense. Nevertheless, in actual practice this does not degenerate into the view that “anything works,” that is, is admissible. Certain things are prerequisites for such work in this field:

1. The physician must have a profound respect for the patient and his efforts to get through this life with a maximum of gratification and a minimum of discomfort. It is a good thing to assume that the patient is doing as well as he can, considering all the circumstances of his heredity, his environment, and his own personality make-up. The physician’s task is to help him arrive at a more useful effort.

2. The physician must have a high degree of sensitivity to the items of special emotional significance for the patient. This is enhanced by a broad

understanding of *(a)* the infinite varieties of living, working, and playing; *(b)* the varieties of idealistic yearnings and their religious systematizations; *(c)* the wide differences between overt assertion and covert intention; and *(cl)* the language of dreams and other “uncensored” productions, of the treasures of the ancients as expressed in mythology and their legends, and of the wisdom of philosophers, poets, essayists, dramatists, and artists of modern times.

3. The physician must have a sound knowledge of child development, of family structure and its variants, and of the accepted principles of personal and community mental hygiene as they apply to different ages and ethnic groups.

4. The physician must have understanding of his own personality assets and liabilities and of the degree of control of the latter. The physician must be aware of his own reactions to the patient and be able to deal honestly with them in the same manner that he expects his patient to do. On occasion, this may even require him freely to expose his own feelings to the patient, together with his methods of dealing with those feelings. Such self-exposure may alleviate the patient’s anxiety in discovering that the physician also has the same sorts of problems with which he must contend. Customarily, however, it is not necessary for the physician to use such methods. He may safely allow himself to remain in the role allotted him by the patient—that of

a person who knows how to live better than does the patient and who can help the patient find clues to his own better performance. Acknowledgement of the difficulties involved in mature living will be enough to indicate that the physician is not godlike in his perfection and has experienced his share of difficulties.

Distributive analysis begins with a consideration of the presenting complaint, the patient's or family's relatively naive descriptive view of the trouble, with whatever concern for provocative factors can be elicited. This account commonly suffers in the latter aspect owing to (1) the patient's (or family's) innocence of sound knowledge of personality organization and operations and (2) the need to protect the self-esteem by throwing up defenses (to self and others) against the full exposure of provocative items in the nature of unacceptable personality traits or actions. There results, then, a crude effort at psychic homeostasis, where suffering is exhibited and at once is partially counterbalanced by defensive symptom formation. Both items operate through the common psychological mechanisms of repression, projection, denial, substitution, amnesia, conversion, psychosomatic display, and so forth.

As physicians, we learn to detect or to suspect such mechanisms selectively from the type of account given. Our further effort is directed toward bringing this material to the patient's awareness, to the degree that he

can emotionally accept; that is, the analysis of motives and actions, conscious and less conscious, must proceed within the bounds set by the need to secure the safety of the patient. Depending on the type and severity of the illness, and conversely on the demonstrated degree of ego strength, this will vary from the most thoroughgoing exposure to positive efforts at aiding its repression and bolstering the ego in its efforts at reality adjustment.

Psychotherapy, as conceived of in psychobiology, begins with symptom analysis (the complaint). This leads quickly to an analysis of the motives involved, that is, motives of the moment, so to speak, with a consideration of compromises inherent in such symptom development—a compromise between the hurt sustained and the defense offered to it. This leads further to a study of the habitual attitudes and motives, that is, of long-term, “constitutional” personality assets and liabilities, their origins, their workings, and efforts at change.

Change in habitual attitudes is the final goal of psychotherapy and involves (1) understanding of the origins of the attitudes, their purposes, their relative usefulness as early developmental structures, and the point of departure to the present relatively obstructive role; (2) encouragement, indirectly by interpretation or more directly by suggestion and persuasion to attempt new activities based on new attitudes (In either case, the patient’s willingness to try to change involves tentative acceptance of the

interpretations of the attitudes, and trial-and-error efforts in the framework of the physician's understanding and approval.); and (3) the patient's freeing himself from the need for the physician's support and approval as a process of maturing, by his own efforts and those of the physician, and finally by the final acceptance of the validity of those formulations which he has derived wholly or in part from the therapy.

Direct counseling is kept at a minimum, in favor of the patient's discovery of his own prescription for living. This may not always be avoided, however, nor should one dodge the responsibility when it is clearly indicated. This need for categorical advice most commonly arises in dealing with immature characters—weak, indecisive, and lacking in drive. The danger with direct counseling, of course, lies in its furthering dependency needs in such weak characters. Yet this is a risk one must assume on occasion in order to get some initiative and direction into a rehabilitative program.

Psychotherapy Limited by Form of Illness

Experience teaches that certain aspects of the form of illness must be regarded as putting definite limits on the usefulness of psychotherapy, for example:

1. Depression of all but the most incidental neurotic sort is made worse by probing efforts at insight therapy. This must wait until the mood has lifted

or until its effects can be counteracted by massive supportive therapy.

2. States of schizophrenic withdrawal and paranoid misinterpretation have resulted from serious insults to the self-esteem. This fact should impose a most cautious approach in psychotherapy. The patient's willingness to accept the physician as a friendly and sympathetic observer is at a minimum, and abrupt approaches are commonly brushed aside.

3. Where unchangeable and predominant reality factors are present, the opportunity for personality change may be minimal, since the latter does not operate in a vacuum but benefits from the presence of alternatives in the external field. There appear to be two strong dynamic determinants at work in the life history of any individual—the drive to autonomy and the drive to homonymy. To put it briefly, everyone wants to be an individual, but not so much so as to be unpleasantly conspicuous; at the same time he wants to be like others (of his selection), but not so much so as to be lost in the crowd. How to be oneself and simultaneously a member of the group is a challenge which each of us faces, and which each social aggregate faces with larger integrates. Experience shows that this problem is made all the more difficult when the individual suffers from an early imprint of patterns of behavior that deviate from socially acceptable norms, or when his society, chosen or forced on him by circumstances, deviates, in certain tendencies, too sharply from his personally acceptable norms. What the special forms are which conduce to

major and to more minor disorders are not too clear at this point in our history, despite the appealing formulations of Freud, Adler, Jung, and others. In a very general sense, I see in the vicissitudes and fates of the contrasting developmental forces of free love (or approval) and contingent love (or approval), acting from the earliest days and months of the child's life, a basis for much diverse psychopathology. This sets the stage for the struggle toward autonomy and homonymy and for the attitudes to self and others. It contributes to the contrasts of ease and confidence or uneasiness and distrust. Sometimes we can get a fair documentation of these forces in actual historical material or in fantasies, and their exposure in a treatment setting of mutual respect, toleration, and inquiry can lead to alternate and pragmatically better attitudes (irrespective of the aspect of "diagnosis" in the case at hand).

Role Assignment^[7]

In the course of taking the history and in its elaboration, it will become evident that the patient views the physician in a certain role. This is not a fixed matter; it changes from patient to patient and in any patient from time to time. It is almost certain that the kind of role has to do with (1) the frequency of visits, (2) the relative dominance of direct conversation or of free association or other indirect method, and (3) the importance for the provocation of the illness of the preservation into the present of strong

unresolved early relationships with parents, siblings, or other significant figures—unresolved in the sense that unhealthy childish attitudes are preserved (resting either on reality or fancy) and are all projected onto the physician. He is seen, then, not only as a physician but, in a sense, as that other person.

Treatment uses role taking to elicit the full-fledged emotional investment of the unhealthy attitude, but this is done patiently in order to stress the reality of the physician as such. Concentrated therapy tends to favor the emergence of such displaced and distorted role assignments. Fewer and wider-spaced visits tend to limit the role assignment to the realities, with the physician seen as the one who knows better how to live, as supporting and challenging the patient to learn and to use his insight in the development of newer and better attitudes and actual living habits.

Psychobiology uses all techniques as necessary, that is, as demanded by the nature of the complaint and the critical vision of the opportunity for change, but, unlike psychoanalysis, it does not view the development and resolution of the transference neurosis as a *sine qua non* for effective treatment. As I have outlined my working methods, so-called transference neuroses are kept at a minimum, but transference phenomena of lesser degree are abundantly-observable. These may be treated as incidental and passing items or may require analysis, depending on their strength. I do not

shrink from their use, but I do not commonly encounter treatment situations which rest principally on such phenomena.

Suffering promotes the patient's cooperation in treatment, but too much suffering can become a road block. We therefore have to remain eternally sensitive to these contrasting needs: (1) the need to uncover the damaging personality aspects in their actual workings, thereby generating additional suffering as guilt, anxiety, and hostility directed against us or against self; and (2) the need to support the patient in his own efforts at betterment, encouraging the use of the known assets, stressing the compensating assets, and giving alternative interpretations to the excessively damaging ones he makes.

To prevent the turmoil from getting out of hand or to reduce it to the point where efforts at dynamic understanding may be undertaken, drug therapy with tranquilizers, antidepressants, sedatives or even electroshock therapy may be necessary.

Common sense tells us that the ways of getting through this life are judged as better or worse, acceptable or not acceptable, gratifying or humiliating, by the individual and by his entourage. In the most general terms this problem can be reduced to a variety of compromises between the drive to autonomy and the drive to homonymy. In the last analysis our patients do

invest us with the aura of having successfully accomplished this difficult feat ourselves, and of having a fund of information and skill from which they can also profit. It goes without saying that, as physicians, we should, in fact, justify this confidence to the degree that we have integrity in our performance. It is also basic that we do not attempt to impose our own solutions on others, but work toward the maximum realization of the patient's potentialities within the framework of the necessity of living with others who also have their needs.

In treatment as negotiation, we achieve our best performance to the degree that we can successfully deal with the following items: (1) accurate recognition of the form of illness, that is, the kind of reaction exhibited (diagnosis); (2) the experiential material which affords the most plausible explanation of why this form of reaction has arisen and why it continues on (dynamic analysis); and (3) sorting out of the items wherever leverage may be applied in one way or another to change the forces at work (either in kind or degree), and the selection of method to be used for that purpose.

Failure in treatment may result from inadequate management of any one of these items, but I would single out as most basic the failure to achieve a working fusion of the concepts of form and of content in illness. Too many of us are too content with the understanding of only one or the other item. This means that those limitations and opportunities in treatment which are

determined by the fusion or interaction of the two elements are not fully appreciated, leading to a premature choice of methods of working, and blocking the development in the negotiations of the fullest participation by the patient.

It is a cynical truism in medicine, and more so in psychiatry, that “anything works sometimes.” To the extent that this is so, this means only that the wide variety of content items in experiential material and the wide variety of personality organizations lend themselves to a variety of negotiated compromises. It is not difficult to prove that what is meat for one is poison for another, or to show that any variety of personality organization has its strengths and its weaknesses.

Acceptance of the fact of variety does not imply acceptance of the truth of the cynical dictum above. If this were so, there would be no need to concern ourselves with the aspects of worst-bad-good-better-best. But since our patients concern themselves with this matter, then we must also (if for no better reasons).

The most common error arising from the inadequate recognition of the interrelationship of the form and content of illness is today to be noted in the management of those reactions loosely called “reactive depressions.” The term is commonly applied to depressive reactions with gross provocation in

immediate life experience acting on vulnerable personalities. The wealth of content material and the justified suspicion of deep underlying personality difficulties, together with the admixture of overt anxiety along with the depression, lead the inexperienced physician into the error of treating the illness as a neurotic problem, with a maximum of aggressive analysis and a minimum of ego support. This invariably has only one end—the patient is made more anxious and becomes compulsively wound up in futile efforts to extricate himself from the tangle. Experience should dictate, in such instances of well-established depression (form), that one should apply support (reassurance) liberally, based on the sound observation that such mood reactions do pass away. Analysis of the personality and its reaction to the immediate provocative life experience is offered as an elective process for the purpose of developing a sense of plausibility in the total reaction and for laying the groundwork for more extensive personality study at a later date, when the patient is able to face self-revelation without developing crippling loss of confidence, and if he chooses to pursue the matter further. By making the matter elective, in the reasonably sure expectation that the mood will pass anyway, the subject almost invariably responds to the support and can patiently collaborate in the search for ultimate causes, free from that frantic compulsion which ends in futility, deepened self-abasement, and even suicidal risk. There is no more necessary equipment for the therapist than to be sensitive to the nuances and degrees of depression and to judge whether it

is safe to accelerate the processes of self-revelation.

Another error arises in the mistaken evaluation of derogatory delusions and hallucinations as being schizophrenic in the presence of deeply depressive affect. The safe rule of thumb is that when delusions and hallucinations are corroborative of the patient's acknowledged evaluation of himself, then they are to be viewed as affectively determined; when they are viewed by the patient in a sense of denial of his self-evaluation, they are schizophrenic. Treatment then is determined by the decision in the case.

Long-term treatment inevitably runs into sterile unproductive periods. These indicate (1) natural letdowns after more productive periods, (2) resistance to and evasion of topics needing discussion, or (3) the fact that a favorable plateau has been reached, and the patient is indirectly asking the physician to make the decision to let him go on his own for a period. In (1) the physician must school himself (and the patient) to ride out the inactive phase, knowing full well that activity will resume. In (2) evidences of the resistance and evasion become the topics for discussion, and commonly uncover topics of special sensitivity or hostile attitudes to the physician that must be worked through before effective work may be resumed. In (3) the physician's obligation is to bring into the open the question of the desirability of stopping treatment, for good or for the time being. The latter is, in effect, a therapeutic rest, designed to allow the patient an extended opportunity to gauge the

effectiveness of his insights and new habit patterns without the support of the physician. A date for checking in can be made or left open, depending on the patient's own wishes, and his choice is a measure of his feeling of confidence and security.

My remarks so far have been concerned with the patient-physician relationship, but treatment is often a triangular affair, with the family or other interested environmental members being immediately affected. In the case of self-sustaining members of society, as is the case with most psychoneurotics, the "treatment" of the third member of the triangle may generally be left to the patient himself. Yet even here, a simple explanatory statement to the family, with the patient's permission, may be most helpful in furthering the goals of treatment. Specifically, the family's recurrent question, "What can I do to help?" needs a frank answer, even when the question is essentially self-serving and needs nothing more than the advice to "be yourselves." Patients do not live in a vacuum, and, by withholding any simple contact, we may do incalculable harm to the acceptance of treatment by the patient's family.

In psychoses, contact with family is commonly necessary for practical reasons, but, beyond this, the same need is clear in order to lay the foundations for the best acceptance of therapeutic goals and for a frank statement of the shortcomings of our methods and the limitations of our expectations. Such working with the family may be done with or without the

patient being present, depending on the circumstances. The patient must know of our intention to see the family, and this may become a test of his ability to trust our efforts to protect his interests. He finally must be willing to trust us, and this may well be the first test of that fact.

Meyer stressed habit training as a primary aspect of treatment. It is difficult to look back 50 years to a clear recognition of what the term meant then. What it has come to mean in the course of time is the organized effort on the part of the hospital community to enlist the patient's interest in the development of participative activities which will bring him into line with accepted social patterns. It is obvious that this becomes more meaningful the more he can understand his own difficulties, and as more opportunities open to him for alternative actions. So habit training today includes insight, understanding, and acceptance of a trial-and-error effort at behavior change in a social setting sympathetic to the patient's efforts.

The same general principles apply to the nonhospitalized patient, where his society is composed of his family and his work and play setting, and where he is expected to initiate and carry the greater burden of the trial-and-error effort at change. This is the psychobiological equivalent of "working through," with the emphasis on the actual performance rather than on the talking (or preliminary) phases.

To increase the degree and area of understanding is a first need in therapy. How best to accomplish this has led to great divergences in views. To bring into meaningful juxtaposition discrete items from varied aspects of behavior, and so to illustrate and to emphasize common behavior patterns (for good or for ill); to relate present behavior with childhood's precursors, including their residual emotional investments; to uncover material of fantasy or past memory long consigned to some degree of oblivion by personal need, and to relate this material to present behavior—these are some of the devices in current use. Meyer favored formulations based on generally available material, telling their own stories without need for translation into secondary symbolizations. In retrospect, he appears to have made too conservative an estimate of the number of those who could profitably pursue the exploration of the more recondite material, for although there are still few who practice psychoanalysis, most psychiatrists are able to use much of the material so derived in that “detective work” Meyer thought was not generally to be achieved. In fact, the danger today is in the physician's preoccupation with the “unconscious” material, with a disastrous neglect of the readily available aspects of behavior. Much can be learned that is of dynamic import by the closest scrutiny of both the more and the less easily accessible material, and the best handling contrives a continuing interweaving of both sorts.

I have mentioned “plausibility” as the essence of the meaning of illness (content). The term carries an aura of naive tentativeness which may be all

that is necessary for the patient in the way of structural (theoretical) support to enable him to carry out trial-and-error efforts at personality change, with the active essential support of his physician. But the term need not mean only that. At the other end of the spectrum, it may carry a sense of conviction—to the patient if not to the physician. Conviction naturally makes for more full-fledged, less tentative performance, but not necessarily better performance. Premature jelling of conviction may be a real block to fullest understanding, and the physician must guard against contributing to this through premature and authoritative interpretations of historical material. I usually offer interpretations as speculation, for the purpose of arousing in the patient psychological curiosity and of opening the door to his own spontaneous meanings. The physician will use that frame of reference best suited to his own beliefs, derived from his own training experiences. I am not capable of interpretations that go far beyond the relatively easily visible symbolizations, and as I use dream material essentially to dramatize, through spontaneous illustration, the facts arrived at through more conventional conversational methods, this limited use suffices for the purpose. I am prepared for more extensive and searching use of such material by means not at my disposal, but it has always seemed to me that the more distant the symbolic reference, the more it had to be backed by authoritative and dogmatic theory, and the further it led away from the principle of treatment as the negotiated compromise to one of parochial coercion. I prefer to stay much closer to the

more naive meanings in the facts—meanings, as Meyer pointed out, having close affinity with the problems and theories of sociology. I would not force my views on anyone, but for me the facts of intrafamily relationships seldom need to be translated into libidinous activities to tell their story. This already is parochial. But common sense can work with interpersonal and sociological relations, and for me this is the most fruitful means for increasing understanding in terms that are the closest to universal acceptance.

There is a tendency in our field for treatment procedures to become formalized. This applies to frequency of visits or treatments and to their total number. I am aware of the factor of experience in determining such items and of their usefulness to the patient in planning for the financial outlay for treatment, but the therapist should beware of becoming bound by tradition, for there is nothing more destructive of the principle of mutual participation in treatment. The goals will determine the outlook. For example, when one or two electroshock treatments have brought about a degree of volubility regarding meaningful material in a previously mute catatonic patient, the physician will have to make a decision at that point whether to use the new rapport for purposes of psychotherapeutic exploration or to give more electric shock in order to accomplish a forcible suppression of the material. Actually, in this instance the former may be attempted, keeping the latter in reserve for use if it is deemed advisable. I consider tentative use of electric shock in such an instance preferable to the rote application of, say, a series of

ten to fifteen treatments.

As for psychotherapy of the psychoneuroses (at least those seen in office practice) far-reaching modifications—both in easing of symptoms and in change of attitudes and behavior expression—can be achieved by interviews spaced at weekly intervals and continuing for from six months to two years. It is not my experience that improvement under such circumstances can be properly called “transference cures,” for, within the time allotted, the patient has had ample opportunity to demonstrate the worth of his new insights and to achieve that sense of self-sufficiency which does not need the physician’s support. It is my belief that this derives from the fact that, from the first day of treatment, there is a tacit understanding that its purpose is to make the physician unnecessary. Every advance in understanding and management serves to underscore this aspect of the relationship. It is automatic with me to stress—not verbally but by my attitude—that I expect to do all I possibly can for the patient and that he will increasingly want to divest himself of my help. If this latter does not happen, his dependence becomes the object of examination. This is a matter for special concern in those patients who, from the earliest contacts, expect rejection at the therapist’s hands. Without committing myself to interminable contacts, I do not hesitate to reassure the patient on this score, but at the same time I underline the objective of self-sufficiency.

The goal in treatment is to make the physician unnecessary to the patient. We must face the fact that this may not be possible. But even in such endless associations there should be no letup in the effort toward this goal. Encouragement to take vacation trips or even to move elsewhere, if the occasion arises, with assistance in finding for the patient in the new locality whatever help is necessary, will underscore the physician's determination not to let treatment lapse into parasitic symbiosis.

Meyer worked by appealing to the normally functioning part of his patient, and extended this area by removing hindrances arising from special complex content and by enlarging the opportunities for direct exploitation of the normal residual assets. The appeal was to the patient's spontaneity. The physician must also be spontaneous. I can imagine no greater hindrance to effective rapport than the continual interposition between physician and patient of a curtain woven of petty rules and of calculatedly studied speech whose only effect is to arouse in the patient hatred of authority or obsequious abasement before omniscience, to say nothing of gaining us the popular reputation of being not quite normal! "Treatment" then becomes a cat-and-mouse game to be thoroughly condemned.^[8]

As a physician, one may learn much about the patient's neurotic complexes by his reaction to the physician's spontaneous gestures of civility. For example, a woman, who had spent an hour expressing her craving for

approval and her certainty that it would never be accorded her, exposed her problem dramatically when she could not accept the physician's gesture of helping her into her coat, and literally ran from the office. Much precious time in circuitous talking was avoided by direct use of this incident. Should the therapist have restrained his civilized spontaneity? I think not. The erection of utterly artificial barriers removes the patient that much farther from life itself and makes his return the harder.

Psychobiology as Objective Common Sense

Meyer referred to his psychiatric teaching and practice variously as genetic-dynamic, psychobiological, objective, and common sense. I have discussed the application of the terms "genetic-dynamic," and "psychobiological" in relation to his teaching and practice. By "objective," he stressed that people are judged by their behavior, and behavior is a matter for objective observation. This includes the corollary that full-fledged performance implies also subjective items which antedate and lead to overt behavior. It follows, then, that treatment should result in a change in objective behavior. In his hospital work he developed the use of ingenious charted checks on the behavior of the patient, showing at a glance the status of the patient at any given time and over the longer term. These, supplemented by nurses' notes, proved most valuable adjuncts to the physician's observation. For outpatients, such records are not practicable or necessary, but the

principle of using the observations of those people who are near the patient is a device too little used today in deference to the concept of treatment as a closed circuit between patient and physician. Granted that such a reduction of the number of participants in treatment is generally adequate, there are instances where collateral objective observation is not only useful but necessary.

The term "objective" also refers to the quality of the quasi-experimental settings or procedures which can be devised for observing overt behavior and which will reduce to a minimum the variations introduced by the factor of the human observer. This is a field that has been studied experimentally in animals by Curt P. Richter and by W. Horsley Gantt, and the human subject by D. Ewen Cameron. The reader is referred to their voluminous contributions for the details.

"Common sense" was a term which Meyer used with some relish and which has been badly misunderstood. Critics have wrongly assumed that he used the term in the naive sense, leading one of them to say in rebuttal, "Psychiatry starts where common sense leaves off."

Meyer used the term in more than one sense:

1. He usually prefaced the term with the word "critical," to indicate that the common sense was that of persons entitled to be

critical, that is, of those having an acquaintance with the subject.

2. Common sense was essentially a translation for the term "consensus," and as such represented Meyer's constant quest in theory, teaching, and practice for those items of agreed value.
3. In certain connotations, however, there was a flavor of the naive in his awareness of the fact that the material of theory and practice of psychiatry, so dear to psychiatrists, was in no wise sacrosanct and, in fact, was subject to modification, acceptance, or rejection at the hands of the general public. He felt, therefore, that the main task of psychiatry was an educative one, that it must rise or fall on its demonstrated worth to the public generally. It is in this sense that the treatment situation reduces to a matter of negotiation.

It is in the search for consensus that Meyer's psychiatry exhibits its strength, for obviously in this search no method, theory, or experimental procedure can be ignored. It is clear that at any one institution or at any one person's hands, only a limited number of items of method, theory, or experiment can be put to test. But in the pooling of results, and in their critical evaluation, the consensus (common sense) can eventually be achieved. The objectivity of the results must be the final test of the value of the theory and method. This leaves Meyer's psychiatry as eclectic, free to use the method best suited to the dimensions and qualities of the problem and to the assets of

the physician.

In indicating briefly how I work, I recognize this only as an individual sample of the free development of method under the terms of the Meyerian conceptions. I have reason to believe that many (maybe most) workers today employ the same general principles. A catalogue of the variations of method and their correlation with theory and with the personal assets and needs of the therapists would be a useful contribution to the goal of consensus—a goal not likely to be achieved, however, since we work in relative isolation. I was about to say “jealous isolation,” but maybe “anxious isolation” would be nearer to the facts. My observations are offered for whatever they are worth, and in the spirit so well depicted by Adolf Meyer:

We do not so much aspire to eternity, but to leave, when we pass, the best opportunity for new times and new life. So it is with medicine. The goal of medicine is peculiarly the goal of making itself unnecessary; of influencing life so that what is medicine today will become mere common sense tomorrow, or at least with the next generation. The efforts of the worker of today become so assimilated in the common sense of tomorrow that it must be our pride to see that it has passed into the real objective nature of the world about us, no longer burdening our attention, but allowing us or those after us to do the same for ever new problems, with ever new achievements and satisfactions.

Mental Hygiene

Treatment may end with the re-establishment of the personality state existing before the advent of illness. But psychiatrists, more than any other medical practitioners, hold dear the aim of deriving from the experience of illness the tools for guarding against recurrence or, indeed, to thwart other illness. In this learning- from-illness process, we depend wholly on psychotherapy to point the way to a more satisfying way of living—a personal mental hygiene. This is a complex matter at best, and the results are debatable, since it is difficult to see how any suitable test methods could be erected. In none of the functional diseases do we stand on that solid ground of mental hygiene which for the former alcoholic prescribes total abstinence. Nevertheless, each of us has assisted in the formulation of new attitudes which have been credited with bringing a lasting harvest of satisfaction in living. The problem is (1) to formulate the achievement in a way to permit statistical study and (2) to list the concrete therapeutic steps taken to consolidate the gains. This is an unfinished task confronting our generation, especially in regard to the major functional disorders— manic-depressive and schizophrenic reactions.

But a fully effective mental hygiene would envisage that of the group, the society in which the patient is but a member. This task is, perforce, a joint endeavor of all whose concern is organized society—general medicine,

psychiatry, psychology, sociology, anthropology, law, religion, education, political science. I cannot see that any generally valid principles have been established applicable to all societies, or even to any one, but much experimentation and theorizing are in evidence, and serious concern is demonstrated for society's stake in the welfare of the individual as well as the individual's stake in the welfare of his society. Changing times are making for changing tools with which the individual expresses his parallel, and in some ways paradoxical, needs to autonomy and homonymy. New varieties of personality organizations develop, and new outcroppings of difficulties demand new efforts at correction. The one thing certain is that this process will never settle down in the foreseeable future into any static set of patterns which would simplify personal and social psychiatric theory and practice.^[9]

Résumé

As with any significant figure, Meyer's mature teachings and achievements were somewhat prefigured in his involvement in, and reaction to, early family and cultural influences. His father was a Swiss Zwinglian minister and his uncle a practicing physician. His "psychobiology" was the effort to integrate the concern for the "spiritual" (mental) and "physical" represented by these family figures, and molded by the cohesive Swiss culture; but enriched by his involvement with the views of T. H. Huxley, Sherrington, Charcot, Forel, Kraepelin, Freud and his early associates, and

particularly with the American school of pragmatism of William James and his followers.

Working in institutional settings, the state hospitals of Illinois, Massachusetts, and New York, he later was instrumental in the establishment of university teaching and treatment centers in New York and Baltimore. From these centers he saw the goals of psychiatry spread beyond the walls and the beginnings of a genuine community psychiatry developing.

For him the psychiatrist was a negotiator, working with the raw material of observable malfunction, with the purpose of assisting in the creation of a meaningful (that is, acceptably plausible) history up to the present; and from that creation the opening of new and better (that is, less threatening and more fulfilling and rewarding) options for the future. This goal is not unlike the creative artist's and avails itself of the most diverse theoretical views and methods. Always comes the ultimate test: Does it work?

His open-ended approach opposed rigid codification of theory and practice, for he, rightly, I think, saw that as the historical bane of our science. The search then centered on the consensus—the generally agreed on—with a welcome eye for the innovative.

Much of current theory and practice must be looked upon as dispensable at a date not too far distant. If I were to be asked what of the

Meyerian tradition will likely live, I would single out the integration concept and treatment as negotiation.

Bibliography

- Angyal, A., *Foundations for a Science of Personality*, Commonwealth Fund, Harvard, Cambridge, Mass., 1941.
- Cameron, D. E., *Objective Experimental Psychiatry*, 2nd ed., Macmillan, New York, 1941.
- Cameron, N., *The Psychology of Behavior Disorders*, Houghton Mifflin, Boston, 1947.
- ____, and Magaret, A., *Behavior Pathology*, Houghton Mifflin, Boston, 1951.
- Cobb, S., "Monism and Psychosomatic Medicine," *Psychosom. Med.*, 19:177, 1957.
- Diethelm, O., *Treatment in Psychiatry*, 3rd ed., Charles C Thomas, Springfield, Ill., 1955.
- Henderson, D. K., and Gillespie, R. D., *A Textbook of Psychiatry for Students and Practitioners*, 7th ed., Oxford, New York, 1950.
- Leighton, A., "Introduction to Collected Papers, Vol. IV," *Ment. Hyg.*, 4:16, 1952.
- Lemkau, P., *Mental Hygiene in Public Health*, 2nd ed., McGraw-Hill, New York, 1955.
- Meyer, A., "The 'Complaint' as the Center of Genetic-Dynamic and Nosological Teaching in Psychiatry," in Winters, E. E. (Ed.), *Collected Works of Adolf Meyer*, Vol. III, p. 1, Johns Hopkins Press, Baltimore, 1951.
- ____, "A Discussion of Some Fundamental Issues in Freud's Psychoanalysis," in Winters, E. E. (Ed.), *Collected Works*, Vol. II, p. 604, Johns Hopkins Press, Baltimore, 1951.
- ____, "Fundamental Conceptions of Dementia Praecox," in Winters, E. E. (Ed.), *Collected Works*, Vol. II, p. 432, Johns Hopkins Press, Baltimore, 1951.

- ____, "Monismus als einheitlich kritisch geordneter Pluralismus," in Winters, E. E. (Ed.), *Collected Works*, Vol. III, p. 38, Johns Hopkins Press, Baltimore, 1951.
- ____, "The Psychobiological Point of View," in Winters, E. E. (Ed.), *Collected Works*, Vol. III, pp. 429 ff., Johns Hopkins Press, Baltimore, 1951.
- ____, *Psychobiology: A Science of Man*, (Tr. and Comp. by Winters, E. E., and Bowers, A. M.), Charles C Thomas, Springfield, Ill., 1958.
- ____, "Remarks on Habit Disorganizations in the Essential Deterioration, and the Relation of Deterioration and the Psychasthenic, Neurasthenic, Hysterical and Other Constitutions," in Winters, E. E. (Ed.), *Collected Works*, Vol. II, p. 421, Johns Hopkins Press, Baltimore, 1951.
- ____, "Spontaneity," in Winters, E. E. (Ed.), *Collected Works*, Vol. IV, p. 460, Johns Hopkins Press, Baltimore, 1952.
- ____, "Thirty-five Years of Psychiatry in the United States from Present Outlook," in Winters, E. E. (Ed.), *Collected Works*, Vol. II, p. 1, Johns Hopkins Press, Baltimore, 1951.
- ____, "The Treatment of Paranoic and Paranoid States," in Winters, E. E. (Ed.), *Collected Works*, Vol. II, p. 517, Johns Hopkins Press, Baltimore, 1951.
- Muncie, W., "Psychobiologic Therapy," *Am. J. Psychotherapy*, 7:225, 1943.
- ____, *Psychobiology and Psychiatry*, 2nd ed., Mosby, St. Louis, 1948.
- ____, "Treatment in Psychobiologic Psychiatry: Its Present Status," in Fromm-Reichmann, F., and Moreno, J. L. (Eds.), *Progress in Psychotherapy*, Grune, New York, 1956.
- Strecker, E. A., Ebaugh, F. G., and Ewalt, J. R., *Practical Clinical Psychiatry*, 6th ed., Blakiston, New York, 1947.
- Syz, H., "The Concept of the Organism-as-a-Whole and Its Application to Clinical Situations," *Human Biol.*, 8:489, 1936.

[1] For a good introduction to and a survey of Meyer's thinking and contributions in the fields of neurology, psychiatry, medical teaching, and mental hygiene, the interested reader is advised to turn to the introductions in the several volumes by, respectively, Louis Hausman, Sir David K. Henderson, Franklin G. Ebaugh, and Alexander H. Leighton.

For a more extensive and detailed treatise on treatment bearing largely the stamp of Meyer's influence, see references 6, 7, 21, 22, and 23.

[2] For a historical review of the development of the concept, see references 15 and 24.

[3] This is the monistic explanation Stanley Cobb recently underscored as the total of all psychosomatic effort.

[4] The most detailed account, still a classic, is to be found in references 19 and 22.

[5] Projective tests may round out the clinical picture with added content details including the defensive mechanisms, or they may offer a personality profile wholly at variance with the clinical judgment. This dilemma is of utmost interest and needs further elucidation.

[6] This statement must be taken with the reservation that dream interpretation and the patient's acceptance of it are open to the same influences that interpret overt behavior and accept such interpretation.

[7] For an excellent description of role taking in therapy, see references 3 and 4.

[8] For example (from real life):

Newly admitted patient to the chief physician making rounds: "Good morning, Dr.

Physician: "Why do you say that?"

Sequel: She recovered from her self-limited illness, but with contempt for this physician. And why not?

[9] For an account of current efforts in community mental hygiene, see reference 9.