ABNORMAL PSYCHOLOGY: USE AND MISUSE

Joseph Zubin*  
Department of Psychiatry  
University of Pittsburgh School of Medicine  
Veterans Administration Hospital  
Highland Drive, Pittsburgh, Pennsylvania 15206

An evaluation of the uses and misuses which abnormal psychology has undergone during the 20th century is indeed a challenging task, but too vast to be encompassed in a short article. Accordingly, this paper will limit itself to some of the outstanding applications and misapplications, with special reference to the biometric aspects of the field; that is, the more measurable, objective contributions.

THE PAST: 1900–1939

The primary contributions of abnormal psychology before World War II were in the following areas: psychometrics, experimental laboratory investigations, evaluation of treatment, animal experimentation, and epidemiological investigations; but, like the splitting of the atom, they did not invariably lead to beneficial results for society in all fronts. Then, biometricians like Pearson were very impressed with genetic and racial views, and the early psychometricians like Burt adopted these views with regard to intelligence tests. (The unfortunate misuses of such tests in selection for higher education, selective immigration, and the biased attitudes towards educability of members of subcultures which such views engendered are still with us today.)

Personality measurement developed along two dimensions, the objective and the projective. While the objective approach through self-report inventories made considerable headway through such instruments as the MMPI, its thrust was primarily practical and atheoretical. Its dependence on the ecological niche that the responder occupies as well as on his vital and demographic characteristics is only now becoming evident. Furthermore, its usefulness in diagnosis of the more severely mentally ill is still a moot question. The proliferation of instruments of lesser scientific merit than the MMPI in industry for selection of employees had perhaps denigrated the usefulness of the self-report method unduly, at least for normal screening purposes.

The moderate usefulness of these techniques for screening in the military forces and in the Peace Corps restored some of the faith in them.

In the area of vocational guidance, the Strong Interest Blank parallels the achievement of the MMPI; but here, too, the indiscriminate use of less well-established instruments in industrial applications had tended to lower the overall usefulness of the more established techniques between the two world wars.

The structured character of the personality inventories has been regarded as a limitation by those who worked with projective techniques, who claimed that the freedom provided by the unstructured projective methods, particularly the Rorschach, captured more of the subtler aspects of personality. Because of this promise, special freedom was demanded for projective techniques, such as the removal of the usual psychometric req

Experimental Psychologists

Beginning with Kretschmann and the clinic, and conceptual responses of learning and re their relative simplification of logical measures, e.g., frequently, and concealing the Galton and developed the concept of a psychological model. On the negative sense of the nature of the patients of that day, an atmosphere of gigantism within the prison-like As a result, in attempts, a result which undertaken in most i wonders whether it w of this period to a hi
usual psychometric requirements of conventionally expected objectivity, reliability, and validity. (Unfortunately, the projective techniques slipped into the field during an era when psychology was expanding so fast that there was no one to examine them for psychometric stability.)

By the time the experimental approaches for re-examining reliability, validity, and objectivity were begun, these evaluation techniques had acquired status under the "grandfather clause" for acceptance. Despite many attempts at determining its psychometric properties, and despite the sheer weight of the evidence against its reliability and validity, not to mention objectivity, the Rorschach technique, like many other projective tests, is still in great vogue. It is satisfying to see, however, that the newer techniques, such as the Szondi and others, did not qualify under the grandfather clause and were finally excluded from the field when their performance failed to live up to the psychometric requirements.

More recently, attempts have been made to deal with the Rorschach technique, not as a test, but as an "interview"; and when this is done and the interview protocol is analyzed for its content by means of specially designed scales, very valuable results are often obtained which correlate with the results based on other types of interviews. Perhaps the most devastating indictment of the Rorschach comes from the Burghölzli itself where the technique was born and from one no less renowned than Manfred Bleuler, who grew up while Rorschach was working at the elder Bleuler's clinic. The younger Bleuler was interested in determining the presence of latent schizophrenia in the relatives of the 208 probands whose entire life course he had followed up. It was a generally accepted hypothesis in Rorschach circles that the Rorschach technique is eminently suited for this purpose. To his surprise, Bleuler found the technique useless for his purpose and even went on to report as follows in his recent monograph in a chapter by Uchtenhagen:

This investigation establishes with certainty: Rorschach results as they are observed especially with schizophrenics are also produced by individuals with complete psychological health lasting for decades and with perfect preservation of life and without schizophrenic disorders being observed among their closer relatives.3

Experimental Psychology

Beginning with Kraepelin, who introduced the techniques of experimental psychology to the clinic, studies of the physiological, sensory, perceptual, psychomotor, and conceptual responses of the mentally disordered were initiated, as well as studies of learning and retention. Psychomotor studies, e.g., reaction time, because of their relative simplicity and ease of application, became especially popular. Physiological measures, e.g., GSR and other autonomic measures, were also used quite frequently, and conceptual techniques like the word association tests, begun by Galton and developed by Jung and later by Kent and Rosanoff, became very popular. Perceptual approaches, as in perceptual constancy studies and other experimental psychological methods, also were in vogue.

On the negative side, the greatest difficulties were met because of the heterogeneous nature of the patients, the rather poor diagnostic acumen of the ward psychiatrists of that day, and the custodial atmosphere of the hospitals; but perhaps the greatest stumbling block was the patients' lack of motivation, interest, and attention within the prison-like milieu of the hospital.

As a result, in nearly every function tested they did less well than normal controls, a result which could have been predicted even before the experiment was undertaken in most instances. Yet the literature is full of such findings, and one wonders whether it would not be wise to consign the entire experimental literature of this period to a historical morgue.
Treatment

The primary therapies before World War II were psychoanalysis and psychotherapy, although somatic therapies, especially for general paresis, and later (in the 1930s), shock therapies developed. Attempts at evaluating these therapies floundered for lack of specific criteria for measuring outcome and for lack of instruments to measure change in status and in behavior. These had to wait another decade before they came into use.

Assessment

Here is an apocryphal story about how the Malamud-Sands Rating Scale came into being. Hudson Hoagland, the physiologist at Worcester State Hospital, rushed into Malamud's clinic one day reporting that he had found some unusual biochemical difference between some of the patients and wanted to know what clinical measures Malamud had. Malamud looked up perplexed and indicated that he had no measures but that his data were all in the case history chart. Hoagland looked at the case notes, found no quantitative information, and left in disgust. That night Malamud took the case histories home, rated them for a variety of scales and came back the next morning with quantitative data. This was the beginning of one of the first rating scales in psychopathology, the Malamud-Sands Rating Scale. The rapid proliferation of rating scales since then is a consequence of the studies in the wake of World War I indicating that the usual clinical interview was unreliable and invalid, because of its lack of structure, direction, and constancy of coverage. The rating scale, by focusing on specific aspects of behavior, could attain the requisite levels of reliability and validity. But it was so specific and limited in scope that a total picture of the patient could not emerge, and the need for complete coverage eventually led to the structured systematic approach to interviewing after World War II.

Animal Experimentation

The relevance of findings in animal research for human behavior is so great that it need hardly be documented here. For our knowledge of human conditioning, human physiology, and brain function is we are deeply indebted to the many animals who were sacrificed in the process of discovery. One must, however, be very careful in extrapolating animal findings to man. One of the most blatant extrapolations was made by no less an authority than the distinguished "father of behaviorism" John B. Watson, in a book on child care in which he advocated an impersonal approach, prohibiting hugging and fondling, and in general frightening parents away from tender loving care.

Epidemiology

One of the most often quoted studies in the epidemiological approach to psychopathology is that of Faris and Dunham,7 who found that the correlation between first admission rates and average rental in the "natural" areas of the city of Chicago was negative for schizophrenia while the rates for manic depressive psychosis showed no consistent relationship to rental.

This study made an impact on the field, opening the door to many more sociological investigations, raising many interesting questions, among them the para-
mount question of whether the low-rent disorganized areas of the city bred schizophrenia or whether the schizophrenics tended to drift into the poorer areas. However, two misapplications of the epidemiological method are exemplified in this type of approach. The first is the ecological fallacy involved in equating the correlation between means of groups in two variables to the total correlation between the scores on these two variables achieved by the individuals who constitute these groups. Since the total correlation is composed of two parts—the intragroup correlations and the between group means correlation—the equating of the between-means correlation to the total correlation is unwarranted. An example of the wrong inferences that the ecological fallacy engenders was demonstrated in the repetition of the Faris and Dunham study in Bristol, England.

There, too, a negative correlation was found between rental and risk of schizophrenia, but an examination of the within-group correlation revealed the fact that only those areas in which a high population of "loners" lived had the higher rates. On investigation of the individual cases, it became apparent that it made no difference whether a "loner" lived in a plush hotel or in a flophouse; both were equally prone to schizophrenia. The negative correlation was produced by the high frequency of "loners" in the poorer districts. Clinicians, who often distrust statistical findings, should, however, not rejoice too wildly over this disconfirmation of epidemiology, since they are guilty of the complementary clinical fallacy of equating the total correlation between two variables to the intragroup correlation alone. In this way Buerger's disease was regarded as a "Jewish" disease until it was diagnosed in the King of England.

Another problem that bedevils epidemiological findings is the selected population on which the data are based. For a long time, much knowledge of the relation between demographic variables, vital statistics, and mental disorder was based on mental hospital populations. Benjamin Malzberg, for example, spent a lifetime collecting and analyzing such statistics, but it was not until the sampling survey method was introduced that it was realized only a small portion of the mentally ill are ever hospitalized and that the relationship found in the tail end of the distribution containing the hospitalized patients did not hold true for the entire population.

The Present: 1945–1973

The present era, dating from the end of World War II, is a little more difficult to describe because of the lack of a time perspective. One result of participation by psychologists and psychiatrists in the war effort was a rise in public expectation of future achievements in abnormal psychology. An expansionist mood prevailed which led to extravagant claims by some professionals that they could cure and even abolish mental ailments. (Those in abnormal psychology are still suffering from an inability to reach these unrealistic goals and much of the negative reaction to mental health research today may be laid at the door of the post-war unrealistic optimism.)

Perhaps a view as seen from a biometric vantage point might be enlightening: The greatest advances as well as failures in the present era are in descriptive psychopathology and evaluation while progress in etiology is less dramatic though just as challenging.

In the descriptive area, we have lived through a veritable revolution. Sparked by the need for describing behavior because the modern therapies produced such dramatic changes in a short period of time—instead of the slow, gradual, imperceptible changes which the earlier psychotherapies and psychoanalyses seemed to produce—an entire series of focused rating scales aimed at specific behaviors has proliferated. Some scales are little more than means for checking clinical impressions while...
others are well-constructed, systematic, reliable, and even valid, instruments which help to establish the efficacy of various treatments.

Burdock, Endicott, Hardesty, Spitzer, the author, and others launched an attack to transmute the unreliable, unsystematic, free-wheeling blunderbuss of the clinical mental status interview into a “sharp-shooting rifle” which came to be known as the Mental Status Schedule8 which subsequently gave rise to the Psychiatric Status Schedule and a variety of similar forms.

Actually, one of the failures of the descriptive approach was its inability to utilize successfully psychological tests in the diagnostic procedure. While entire generations of psychologists have been trained in the use of psychological tests for diagnosis, the literature in this area is most disappointing. Windle10 reviewed the prognostic and diagnostic value of psychological tests and concluded that these tests were neither reliable nor valid. This conclusion applied not only to projective techniques but also to the various experimental techniques arising from experimental investigation of the physiological, sensory, perceptual, psychomotor, and conceptual functioning of the mentally ill.

The low reliability and low validity of the tools for classifying mental patients by rating scales, interviews, or tests stem from three major sources. With regard to testing, most psychological tests, as has been noted before, yield results in which the patient invariably shows up to disadvantage because motivation, interest, cooperation, and attention are much lower in the mental patients than in the control groups. Moreover, in diagnostic or research interviews, there is little agreement on the definitions of clinical terms as anxiety, depression and depersonalization, and this is especially true in “cross-cultural” studies.

To reiterate, in regard to diagnosis itself, no general agreement has ever been reached on operational definitions within each category, and since there are no objective markers for each disorder, only consensus-based operational definitions can serve the purpose.

Fortunately, certain technical advances make it possible to deal with some of the above problems: With regard to definition of terms, the video tapes of interviews can serve as a “training device” in which specific items of psychopathology can be presented and “rated,” and thus training in recognition of the specific aspects of psychopathology can be provided.

With regard to diagnosis, specific criteria have been developed, a certain number of which have to be present before a given diagnosis can be applied. This specification of Research Diagnostic Criteria evolved from the St. Louis, Iowa, and New York Collaborative Studies.11

With regard to psychological testing, only after the diagnostic interview problem is cleared up can any progress be made, since the interpretation of test performance depends on the results of an interview for its criterion. Furthermore, it is no longer necessary to demonstrate that schizophrenics, for example, have longer reaction times, show poorer perceptions, and exhibit deviant word associations; it is quite clear that their poorer performances may be an indicator of a generally low motivation level rather than an indicator of specific psychopathology.

In order to find usefulness for psychological tests, the test must be free from the incidental influences of lack of cooperativeness, low motivation, and disinterest. One way of eliminating these extraneous influences is to compare the influence of various manipulations such as modality-switch effects on reaction time within, rather than between, individuals. In this way, individual differences in level of performance are ruled out. Further, if it were required that the task in question should elicit better performance on the part of the mental patient than on the part of the "normal" person patient.

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Instruments which have been attacked are those of the clinical type, now known as the Psychiatric Status Rating Scale. While entire generations of psychodiagnosticians have argued against the validity and reliability of these tests, the mental health profession as a whole is in agreement that these tests are reliable and valid. They function from experimental models of health and mental illness, and conceptual definitions of mental illness.

One advantage of these instruments by far outweighs their disadvantages. With regard to variability in the results obtained in which the same test is administered to a control group, we are on the threshold of the definition, and this is probably why the test has not been as widely used as it should be. Since there are no specific diagnostic criteria for a particular condition, the validity of the test will vary with some of the specific diagnostic criteria. However, the use of the Psychiatric Status Rating Scale can be extremely useful when trying to identify specific aspects of personality or behavior.

In the case of the interview problem of the test performance of patients, it is not longer necessary to rely on the results of the test. It is quite common now to find the psychiatrist interested in a particular patient, and he or she may be free from the influence of the patient's state of mind. However, the interview problem of the patient is still of concern to the psychiatrist. The psychiatrist considers the interview problem in its entirety, rather than just the performance of a patient on a particular test. In this sense, the interview problem is similar to the test problem, and it is important to consider both the test problem and the interview problem in the evaluation of a patient.

The proliferation of tests, interviews, and rating scales has reached the point now where the patient is sometimes regarded as a data producer instead of as an individual who should be observed, studied, and understood. Even the integration of these data is no longer the province of the clinician but is shared with the computer. As the computer into whose maw the data are fed at one end and the conclusions and diagnoses emerge from the other. (Sometimes I feel that the voice of the computer is like the endless buckets of inaudible water inadvertently released by the mindless magic of the sorcerer's apprentice. Is there some way of calling off this deluge and returning to yesteryear's unhurried observation of patients?)

While the keen observation of clinicians during the first half of this century led, not to therapeutic interventions, but to stagnation in the hospital wards, today's hyperactivity in new techniques may lead to stagnation through the computer in the well-known formula of GIGO (garbage in, garbage out).

Nevertheless, the advantages of the systematic structured interview have been strikingly demonstrated in two international cross-cultural studies. In the US-UK study, the national differences in official statistics of mental disorders disappeared when the more objective methods were applied, and in the WHO Pilot Study of Schizophrenia, nuclear syndromes of schizophrenia were found ubiquitously in all the nine cultures examined.

As a result of the US-UK study, it became apparent that one of the most dramatic abuses occurring in descriptive psychiatry today is the failure on the part of many state hospital clinicians to differentiate between mania and schizophrenia. Since lithium is now almost a specific treatment for mania, denying suitable treatment because of misdiagnosis may soon become a national scandal if our teaching of diagnostic methods is not improved soon. Similarly, the trend in the United States to diagnose many depressions as schizophrenia, thus denying many of them antidepressants, is another indictment of clinical practice. These misapplications of diagnosis must be rooted out if the mentally ill are to be properly served.

One of the most bitter controversies has raged regarding the question of whether homosexuality per se should be included in the psychiatric nomenclature. In view of the fact that there are a considerable number of homosexual and bisexual individuals, some of them quite prominent, who are quite successful and apparently adjusted in life, the American Psychiatric Association has removed homosexuality from the diagnostic nomenclature but has retained a slot in it for those who are disturbed because of the sexual orientation. While many psychiatrists are still battling this decision, it seems a sensible resolution at least for the time being, without creating any additional problems. Another growing issue is whether disturbance because of addiction to tobacco smoking should also be regarded as a disorder. Both of these issues arise, in part, because of the economic implications for the health insurance firms which cover these conditions when they require treatment. In general, the criterion that suffering is an essential element in psychopathology and that it is often the force driving patients for help, is an important one in determining mental disorders. Consequently, its absence may often mark conditions that do not need the attention of clinicians.
Actually, with but few exceptions, we are abysmally ignorant of the causes of mental disorder. What does one do when faced with such ignorance? All that one can do is contemplate possible or “as if” causes and formulate them in the form of parsimonious scientific models and proceed to test the hypotheses they give rise to.

What are the models that have been proposed? I suggest the following types of models growing out of the medical/non-medical antithesis:

There are, models representing the field theory approach and those representing molecular or biological approaches. The field theory approach begins with the ecological model, which assumes that man’s development, in health as well as illness, depends on the ecological niche he occupies, as measured by the physical, social, cultural, economic, and educational parameters of that niche.

At the opposite pole is the genetic model, which assumes that health and illness are predicated on the genetic equipment man is born with. The middle ground between these two positions, but leaning toward the field theory approach, is held by the learning theory model, and somewhat more tenuously by the developmental approach, while the internal environment and neurophysiological models lean towards the molecular.

Six models have been described elsewhere in detail, together with the evidence for the tenability of each and how far this tenability extends. What follows is a brief sketch and present status of each.

The Genetic Model

The most successful etiological model with the most convincing objective evidence is the genetic model. It suffered some decline when the high concordance rates of the Forties were deflated, but it has regained its foremost position as a result of the investigation of adopted probands in which the biological relatives tended to have a higher frequency of the disorder than the adopted relatives. This gain, however, did not come without some sacrifice, since in establishing this finding, the concept of schizophrenia had to be broadened to embrace a spectrum ranging from the severely ill to the mild, borderline and schizoid personalities. But even the most sanguine geneticist makes an obeisance to possible nongenetic influences because of the 60 percent of monozygotic twins that are discordant for schizophrenia, and until the genetic mechanism is clarified, the model is at a standstill.

The Internal Environment Model

The internal environment model, which stipulates that the source of functional mental disorder is to be sought in the internal chemistry of the body, has generated much new knowledge of normal brain chemistry and even produced a Nobel prize winner, but has not yet paid off in psychopathology. Because of its close link to genetics, it seems to be very promising but has not yet “delivered.”

The Ecological Model

The ecological approach postulates that the sources of schizophrenia are to be sought in the parameters of the ecological niche which a person occupies. But inability to measure these factors objectively or to find variables that transcend local or temporal biases has prevented progress. This model, too, has come to a halt because of the inability to devise suitable measures for the three types of important field forces that impinge on the ecological niche a person occupies: the physical forces in the environment measured by the ecologists have led to a standstill.

The Social-Cultural and System Network Analysis models are in need of further exploration to find out if they can perhaps provide the link needed to the life space of a person.

One of the most striking aspects of mental disorder is that it is not just disease but also the social and cultural context in which it occurs. The model which is due to be discussed involves the social and cultural context of the patient’s illness and the work ethic of the individual in the context of a particular community.

The Developmental Model

A striking aspect of the model is that it has been developed in the context of the social and cultural context in which it occurs. The model which is due to be discussed involves the social and cultural context of the patient’s illness and the work ethic of the individual in the context of a particular community.
the environment, the social forces, and the life events occurring in the niche. Better measures of the physical characteristics of the niche are needed, and thus far the ecologists have not provided a generally acceptable classification.

The social-cultural forces impinging on the niche also require better classification and systematization before they can be generally accepted. Perhaps, the social network analysis developed by Hammer can provide a measure of social interconnectedness for the ecological model which may parallel the consanguineous interconnectedness provided by blood relatives for the genetic model. Life event schedules could perhaps provide a framework for the interaction of all the impinging forces on the life space of the individual. But at the present time the ecological model, too, is at a standstill.

One of the most blatant examples of the misuse of the ecological model is the treatment of political dissidents in some countries as mentally ill. The invoking of a mental disorder when a nonconforming member of society expresses his or her dissent is one of the most unfortunate uses of the concept of mental disorder and indicates that the ecological model may sometimes result in a disservice to mankind. Another example of this process is found in some South American tribes. Pinto, which is due to the invasion of a spirochete producing skin lesions, is highly prevalent in this culture but a few males fail to develop it. They are regarded as deviant and as sick, and are not allowed to marry. The tendency to regard the absence of the work ethic in our own culture as psychopathological, is another instance of an abuse of the ecological approach.

The Developmental Model

A striking aspect of development is the change it brings about in behavior. Much traditional knowledge regarding developmental changes is now undergoing scrutiny on the part of developmental researchers and much of the mythical undergrowth has been eliminated. One myth seems to persist: that of the alleged deteriorative process in older age groups. Moreover, recent studies have found no general evidence for the universality of deterioration with age. While disease makes greater inroads in the older age groups, probably because of greater and longer exposure to the probability of accidents and perhaps also for genetic reasons, the competence of the nondiseased aged seems to be intact. This is of special importance in connection with the mandatory retirement laws. Perhaps it is time for psychologists to provide tests of competence which will replace the mandatory age criterion for retirement.

What might be characterized as a developmental model, actually has two referents which essentially have little to do with each other. The first is based on the idea, stated in its simplest form, that as the organism ages, maturation of function automatically takes place and that this maturation, based upon the development of the nervous system, is essentially a realization of a time-locked or programmed sequence of behavior function, often designated as "stages." This view of development has lead to the kind of work that Gesell produced, closely followed in more recent times by Spock and supported by the actuarial tabulations of the onsets of behavioral and physical growth landmarks of Templin. This mode of development has been applied to psychopathology by Bender, for example, whose view of schizophrenia is based on the idea that a developmental lag occurs at critical periods during the growing organism's life. Following Bender's work, Fish and Shapiro have based explorations of childhood schizophrenia on the same model, particularly to explain disorders of language development in children with thought disorders. The model as set forth by Bender has presupposed a physiological etiolo-
gy and has led to the prescription of drugs and shock therapy, but the evidence has been tenuous as far as etiology is concerned. In a study of speech pathology in children, the developmental lag hypothesis has been utilized by de Hirsch\textsuperscript{23} as well, although she feels that particularly for dyslexia, the lag can be overcome by appropriate prophylactic and supportive remediation therapies.

Freud’s psychosexual stages are another example of developmental stages as are those of Erikson, Shakespeare, Rabbi Judah ben Tema in *Ethics of the Fathers*, to mention but a few of the attempts to relate development to stages. Piaget’s model, certainly the most popular in child development, also a stage model, depends somewhat upon the organism’s interaction with the environment and less upon completely automatic maturation for the realization of function to occur.

However, not much of Piaget’s formulation has been made use of for psychopathology, but rather has been used as a model for normal developmental sequences in many areas and has provided the basis for most research in cognitive functioning.

The other referent for a developmental model is not really a single model, but a label which defines the field as one that takes children as its population for study and often studies behavior as a function of age. Most of the work in childhood psychopathology falls into this category, and the extent of the range of work itself testifies to the fact that the developmental model has not provided a unifying underpinning for studying psychopathology in childhood. Work with children has essentially used all the adult-derived theories in psychopathology, from learning to psychophysiology, to the internal environment to genetics, and has carried the label of “developmental approach” purely on the basis of the fact that the subjects were children.

The developmental model in aging studies can also be characterized as a congeries of studies dealing with elders, and no underpinnings of a developmental model for the aging process, to my knowledge, have been offered.\textsuperscript{†}

The Learning Model

As with the other models of psychopathology, the distinctiveness of this particular model is in part a matter of emphasis rather than of complete uniqueness. Thus, learning theorists recognize, on the one hand, that a biological organism is being observed, and, on the other, that organisms develop and live in particular ecological niches and not in environmental vacuums. The value and importance of the learning model arise from its focus on *contingencies*, i.e., on the temporal and functional relationships among particular behaviors and stimuli (including stimuli arising within the organism itself).

For sound and obvious reasons, experimental demonstrations of the actual learning of pathological behavior have largely been limited to animals, although there have been occasional provocative instances with humans as well.\textsuperscript{24} But the most powerful argument for the role of learning in the production of psychopathological behavior is simply the virtually limitless range of opportunities for stimuli (including response-produced stimuli) and behaviors to become functionally related (basically through operant or respondent paradigms and their variations), as well as the indisputable fact that such relationships occur, through chance or design, in countless numbers.

The significance of the vast conditioning literature largely speaks for itself, with respect to both the conditions assumed to be broadened still further by the introduction of new learning in the form of metaplex learning model, and can not of course be

Neurophysiology

The neurophysiological model of learning to be sought is that the mental processes are made up of distinct, certain that specific criteria do not lead to a forced choice. By comparison, the learning model is perfected in finding (1) Critical differentiations and (2) in the performance of these conditions.\textsuperscript{22} The differences can be the brain processes in brain stimulators and in free periods when there is difficulty. A most study of Sperry’s patients suffering prevent seizure, for making it indicated that

\textsuperscript{†}Author wishes to acknowledge Dr. Suzanne Salzinger as the provider of this description of the developmental model.

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respect to both genesis and maintenance of behavior. Specifically, Miller's work on the conditionability by operant techniques of a variety of responses previously assumed to be conditionable, if at all, through respondent techniques, has broadened still further our view of the possibilities for learning. In addition, a conceptualization of a wide variety of psychopathological conditions in behavior theory terms has been provided by Salzinger.

The development and increasingly wide application of behavior modification or the behavior therapies, with all their many variations, must, of course, be considered, too. While a demonstration of therapeutic efficacy is seldom, if ever, sufficient for specification of etiology, we can at the very least note that the kind of behavioral analysis required for the proper design and implementation of a therapy program has properly served to focus attention on the role of learning in the development and maintenance, as well as amelioration, of psychopathological behavior.

Finally, experimental psychology's concern with objectivity and empirical verification—which, at least initially, formed the context for much of the basic and applied work and which continues as a strong tradition in this area—has served an important methodological role in establishing the validity of the learning model makes to our understanding of psychopathology. But the learning theory model, like the other models, yields only a partial model of psychopathology and can not on its own provide an integrated picture of etiology.

Neurophysiological Model

The neurophysiological model stipulates that the sources of mental disorders are to be sought in the manner in which the brain processes incoming information, and that the mental patient deviates from the normal in this respect. In order to make certain that such extraneous factors as attitudinal and motivational factors or other criteria do not constitute the basis for observed differences between schizophrenics and comparison groups of nonschizophrenics, such methods as signal detection, forced choice, and randomization of tasks across time, are essential as safeguards.

By comparing the patient's performance under standard control conditions with performance under situations which elicit differences and by randomly dispersing these conditions over time, the irrelevant factors can be controlled. We have succeeded in finding several techniques that live up to the above, stringent conditions: (1) Critical duration periods for sensory integration in thought disordered schizophrenics and (2) Auditory thresholds and auditory enhancement in affective disorders. In both these techniques, patients perform better than normals and hence the differences can not be discounted as due to irrelevant factors.

One of the most disturbing difficulties facing any attempt at investigating differences in brain function between patients and normals is the ubiquitous use of tranquilizers and other drugs. One way of resolving this problem is to provide for drug-free periods while testing patients; but this is not always feasible. How to overcome this difficulty is a major problem facing the investigator.

A most striking recent application of the neurophysiological model is provided by Sperry's work with split-brain preparations. Recently, because a number of patients suffering with epilepsy have had their corpus callosum severed in order to prevent seizures from spreading, a sufficient number of cases have become available for making statistical studies of split-brain individuals. The general results have indicated that the left hemisphere controls verbal and analytic abilities while the...
right hemisphere seems to be the locale for musical and spatial abilities. The implication of these findings was that injuries to the left hemisphere would irreparably damage verbal ability and injuries to the right hemisphere would similarly damage irreparably spatial and musical abilities. More recently, Zaidel and Sperry,28 on the basis of specific tests of the separated hemispheres, have proposed the possibility that before age 5 the two hemispheres are functionally equivalent but that after age 5 specialization sets in. The right hemisphere is found to be only about two years behind the left in understanding language, but its capacity for handling syntax is only on the five year level, indicating that age 5 may be the point at which specialization sets in. The possibility that initially both hemispheres were functionally equivalent destroys the myth of irreparable specialization of the two hemispheres and creates the hope of functional restitution in case of damage to either of the two hemispheres.

The lie-detection field furnishes another example of an application as well as a misuse of the neurophysiological model. Lykken29 points out that lie detection is big business today with several million polygraphic records taken annually by some 3,000 professional polygraphers, trained in about a dozen schools, including one run by the U.S. Army. The training of these professionals is for the most part innocent of psychology, the connection between lie detection and psychology being reminiscent of the relationship between chiropractic and medicine. A recent development in this area has been the introduction of preselection screening of employees for honesty because of the six billion dollars lost annually by employee thefts.

Lykken points out that lie detection capitalizes on the difference in autonomic reactivity in response to one or more critical questions dealing directly with the crime and a few irrelevant questions, presumably not autonomically arousing. In contrast, psychologists have developed the “guilty knowledge” test in which a series of items is presented which only the guilty person would have any experience or any knowledge of. The innocent person might by chance react unduly to one or two of these items, but the guilty person would presumably react to quite a number of the crucial items since he or she had some knowledge of them. If the items are independent of each other, “with only ten such guilty knowledge items, each with five scorable alternatives, there would be only about one chance in 10 million that a subject without guilty knowledge would give his or her largest response to the correct alternatives in all 10 items. With a 10-item test, the actual culprit would only have to “hit” on 6 of the 10 items to permit the conclusion “chances are less than one in 1,000 that he is innocent.”29 Thus the Guilty Knowledge Technique has a potential for very high validity. Unfortunately, not all situations permit use; and, furthermore, it is ill-adapted for employee screening for honesty, a use of the lie detector which is growing by leaps and bounds.

But then, the lie detection technique itself is even more poorly equipped for its task. The great need today is to utilize the Guilty Knowledge Technique with greater frequency and develop it further in the field of criminal investigation. As for pre-employment screening with lie detection methods, it is the duty of psychologists to unmask the inadequacy of such methods and curb growing use.

**The Vulnerability Model**30,36,37

After reviewing the six scientific models that have been proposed for examining the etiology of psychopathology and noting that, at the moment, they have all “ground to a halt,” let us examine them all for any common thread that may connect them. In other words, is it possible to do a logical factor analysis of their components and come up with a common factor that explains much of the variance? Put in a goblet, w^

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Actually, the common denominator connecting up all of the six models is a second order model which is best conceived of as the vulnerability model. According to this model, a human is endowed, either as a result of genetic inheritance or acquired traits, with a degree of vulnerability to schizophrenia which under suitable circumstances will express itself in an episode of illness. Some have such a high degree of vulnerability that almost any one of the daily exigencies of living is sufficient to catapult them into an episode. Others have such a low degree of vulnerability that nothing short of a horrendous catastrophe would elicit an episode and even then only a very brief one.

Corresponding to the ends of the spectrum of the six models, ecological and genetic, there are two types of vulnerability, acquired and inborn. Spring and Zubin have pointed out that inborn vulnerability represents the work of the genes, and acquired vulnerability represents the influence of prior experience, exposure to traumas, specific diseases or other environmental life events such as perinatal complications, family interactions, and lack of intimacy in early adolescence. In discussing etiological models, it may have appeared that the individual was considered as either a mere pawn in the hands of ecological pressures or as a mere slave serving out his hereditary doom, hardly a true picture of man.

For a better definition of vulnerability in which man's personal freedom and integrity is maintained, we must look to a concept of health as the maintenance of a dynamic equilibrium against insults continually emanating from the chemical, physical, infectious, psychological, and social environments. When this equilibrium is severely disturbed beyond its capacity to reinstate its own homeostasis, a disorder ensues. It must be noted, however, that the same disturbing event may produce a disorder in one person but not in another, depending upon the degree of individual differences in resistance to the disturbing event.

A considerably amount of evidence has been collected on the role that Life Events play in the elicitation of both physical and mental disorders. A life event stressor is an incident such as a bereavement, promotion, marriage, or divorce which brings in its wake a readjustment and reorganization of a person's life. The strain of readjustment to the occurrence of the life event, if severe enough, may trigger an episode of illness.

It will be noted that as long as the stress is below the threshold of vulnerability, the individual responds to the stressor with a crisis but in an elastic homeostatic way and remains well within the limits of normality. When the stress exceeds the threshold, the person is likely to develop a psychopathological episode. Furthermore, we postulate that the episode is time limited. When the stress sinks below the vulnerability threshold, the episode ends and the patient returns to his pre-episode level of adaptation.

While the vulnerability model is quite capable of dealing with many current problems, it is subject to considerable misapplication if the tentative nature of present knowledge is forgotten. Thus, there is a great temptation to advise schizophrenics not to bear children and to advise mothers of retarded children to refrain from further pregnancies. While in certain special cases it may be advisable to give such counsel, the dependence of mental disorders on triggering life events, be they internal or external, is so highly probable that it is far from certain in any given case whether even vulnerable offspring will develop an episode of disorder. As we obtain further knowledge of the triggering mechanism, there will be more ample opportunity for even the highly vulnerable to avoid the hazards of triggering contingencies.

Some of the misapplications of genetically-based vulnerability have had a rather
unfortunate consequence. Thus, the need for early recognition and intervention in phenylketonuria (PKU) led to laws in several states that required children suspected of a high blood stream level of phenylalanine to be immediately placed on a phenylalanine-free diet. Legislation was enacted before science had an opportunity to determine the precise levels of phenylalanine that are harmful. Moreover, the "culprit" may not turn out to be phenylalanine at all. Science, at best, should be a few steps ahead of the law, but when the law gets ahead of science, unfortunate consequences may follow. Thus, pediatricians, because of fear of malpractice suits, may introduce a low phenylalanine diet, sometimes with "dire" results, when it is unnecessary. Also, experimentation to discover proper and dangerous levels and to discover the mechanisms involved in the occurrence of mental retardation becomes well-nigh impossible.

_Evaluation Studies of Outcome_

One of the most baffling aspects in evaluating the outcome of mental disorders, both treated and untreated, is the complex criteria that must be considered in determining outcome.

Treatment may be defined as planned intervention into a disorder with a view to eliminating or mitigating it, or arresting its progress. In order to intervene effectively, the following must be known: (1) the nature of the disorder, and means to identify it; (2) at which point in time to intervene; (3) how to intervene; (4) what method to use most effectively, and (5) how to evaluate the efficacy of the intervention.

One of the misapplications stemming from a limited approach to behavior modification treatment is the tendency to determine specific target behaviors for treatment, eliminate them, and then expect the patient to behave normally ever after. Some of the early Wolpean desensitization studies in the elimination of fear suffered from the fact that no further guidance or training was offered to guide the patient in adjusting to life after the fear was eliminated. Eliminating fear of water from a good swimmer can have a salutary effect, but eliminating this fear from a nonswimmer may prove disastrous. Similarly, eliminating fear of dating without providing the next steps in friendship with the opposite sex will not lead to successful psychosexual development.

Another misapplication stems from Freud's stressing of the role of sexual maladjustment in the etiology of psychopathology. Sexual behavior, because it involves the most intimate interaction between humans, may serve as a result rather than as a cause of psychopathology. This misinterpretation led to the earlier simple-minded solution of marrying off the mentally disturbed. The stress on sex as a cause of mental disorders has served to confuse parents in their attempt to deal with child-rearing during the first few years of life.

Another misapplication of theory has led to the belief that mental disorder is a myth or that it is a function of being labelled as mentally ill. One must remember that science deals with two types of material: ostensive facts, and concepts for organizing the facts into meaningful entities. Of facts we may ask whether they exist or are true; of concepts, we only ask if they are useful. "Mental disorder" is still a useful concept by all the evidence now available, and schizophrenia, whose very existence has been called into question, has been identified in nine different cultures in the WHO Pilot Study of Schizophrenia on the basis of the existence of syndromes of behavior which are found ubiquitously in all the cultures examined.

One of the most trenchant discussions of outcome of schizophrenia is provided by Manfred Bleuler. After describing the rather good outcome of schizophrenia in

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1. ZUBIN, J. L.

2. SINGER, M.T.

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and intervention in cases of mental disorders, should be considered in detail. A disorder with a view to efficient intervention, effective prevention, and means to intervene; (4) what is the efficacy of the intervention approach to behavior modification? Behaviors for treating the patient in an abnormal state or from a good state to a nonsmoker or nonsmoker. The role of sexual maladjustment is minor, because it is a result rather than as the root cause. The notion of sex as a cause of mental disorder is a fallacy. One must remember concepts and models, but ask whether they exist. Mental disorder is still a concept. Schizophrenia, whose existence is examined, is the result of different cultures and the existence of syndrome. Schizophrenia is provided by the hypothesis of schizophrenia in

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his 208 unselected probands (only 6 percent remained continuously hospitalized, 53 percent returned to the community, only 24 percent were continuously in need of care with 17 percent of mixed outcome), he pointed out why his father, Eugen Bleuler, and his father's colleagues regarded schizophrenia as a chronic, unremitting, and even deteriorating disorder:

That which my father had to a certain extent done in cross-section, I have investigated longitudinally. He could stay with his patients only as long as they remained in his clinic. When they left the clinic, they were thereafter out of sight and lost to him, and this was the case with most psychiatrists of his generation. For this reason, an unfavorable picture of the course of illness had to be inferred: the improved and the healed patients disappeared beyond the horizon of the clinic, and he saw about all those who were unimproved or relapsed. 35

**Summary**

The achievements in the field of Abnormal Psychology have been indeed remarkable. The problems or misapplications that these achievements have engendered are commensurate with the achievements. There has been most marked success in better description and measurement of the characteristics of the mentally disordered, but much less success in determining etiology. Until such time as the etiological factors become better known and their interactions better understood, the vulnerability model may prove to be the model to adopt while waiting for the "doctor to arrive." The triggering effect of vulnerability on vulnerability, in eliciting an episode of disorder, provides a framework for further etiological investigations as well as for therapeutic intervention to either lessen vulnerability itself by means of chemotherapeutical agents or by lessening the impact of life-event stressors through behavior modification approaches or other successful methods of therapy.

Perhaps the single most important effect of adopting the vulnerability hypothesis resides in the possibility that it eliminates the concept of a persistent mental disorder and replaces it instead with the concept of a persistent vulnerability which may express itself in an episode when and only when life event stressors, internal or external, trigger off a time-limited episode. In this way the so-called medical model is transformed into a transactional model giving rise to time-limited reversible episodes of illness under triggering stressful conditions. Under these conditions, therapy takes on a new goal, and instead of searching for a cure, it searches for the contingencies which trigger episodes in vulnerable individuals and tries to prevent them or ameliorate them.

Thus the goal of therapy is not "cure" but prevention of future episodes in vulnerable individuals by reducing the impact of the life-event stressors on the vulnerable individual. Since good premorbid patients tend to get well, or get over their "episode," while poor premorbid patients do not seem to do so, we must develop methods for rehabilitating the poor premorbid status so that they, too, can clearly emerge from their "episodes." 36

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§According to vulnerability hypothesis, both good and poor premorbid recover and return to premorbid status, but the recovery is not noticeable in the poor premorbid because of initially poor "status."


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